Serviceanweisung
Service manual

Midi 2280
Midi 2290

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**Diese Service-Unterlage wurde ausschließlich für autorisiertes Fachpersonal erstellt.
Für Eingriffe durch nicht autorisierte Personen übernimmt der Hersteller keine Haftung.**

**This service manual was only made for authorized specialists.
For interventions by not authorized persons producer doesn't take possession of liability.**

WICHTIGER HINWEIS/IMPORTANT NOTE

Der integrierte CD-Spieler arbeitet mit unsichtbarem Laserlicht.

Nicht in den Strahl blicken und sich nicht dem Strahl aussetzen!

Vorsicht, Laserstrahlung im Inneren des Gerätes!

Zur Vermeidung von Strahlungsschäden darf das Gehäuse nur von qualifiziertem Fachpersonal geöffnet werden.

Informationsetikett auf der Geräterückseite (siehe Bild).

The integrated CD-Player works with invisible laser-light.

Do not look into this beam and don't abandon yourself to radiation.

Attention, laser-radiation also inside of the unit!

To avoid damages of radiation unit should be opened only by qualified service personnel.

Information label on the rear of unit (see picture).

VAROITUS!

Suojakoteloa ei saa avata. Laite sisältää laserdiodin, joda lähettää näkymäntöntä silmille vaarallista lasersäteilyä.

VARO!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

LASER KLASSE 1

Laser λ = 780 nm
P_{max} = 0,5 mW

CLASS 1
LASER PRODUCT

Laser λ = 780 nm
P_{max} = 0,5 mW

LUOKAN 1 LASERLAITE

KLASS 1 LASER
APPARAT

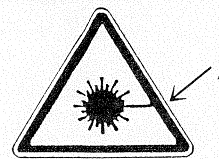
Warnetikett in dem Plattenfach (siehe Bild).

Warning label in record-drawer (see picture).

UNSICHTBARE LASERSTRAHLUNG
NICHT DEM STRAHL AUSSETZEN
LASER KLASSE 3 B

CAUTION
INVISIBLE LASER RADIATION WHEN
OPEN. DO NOT STARE INTO BEAM.

ADVARSAL:
Usynlig laserstråling ved åbning når
sikkerhedsafbrydere er ude af funktion.
Undgå udsættelse for stråling.

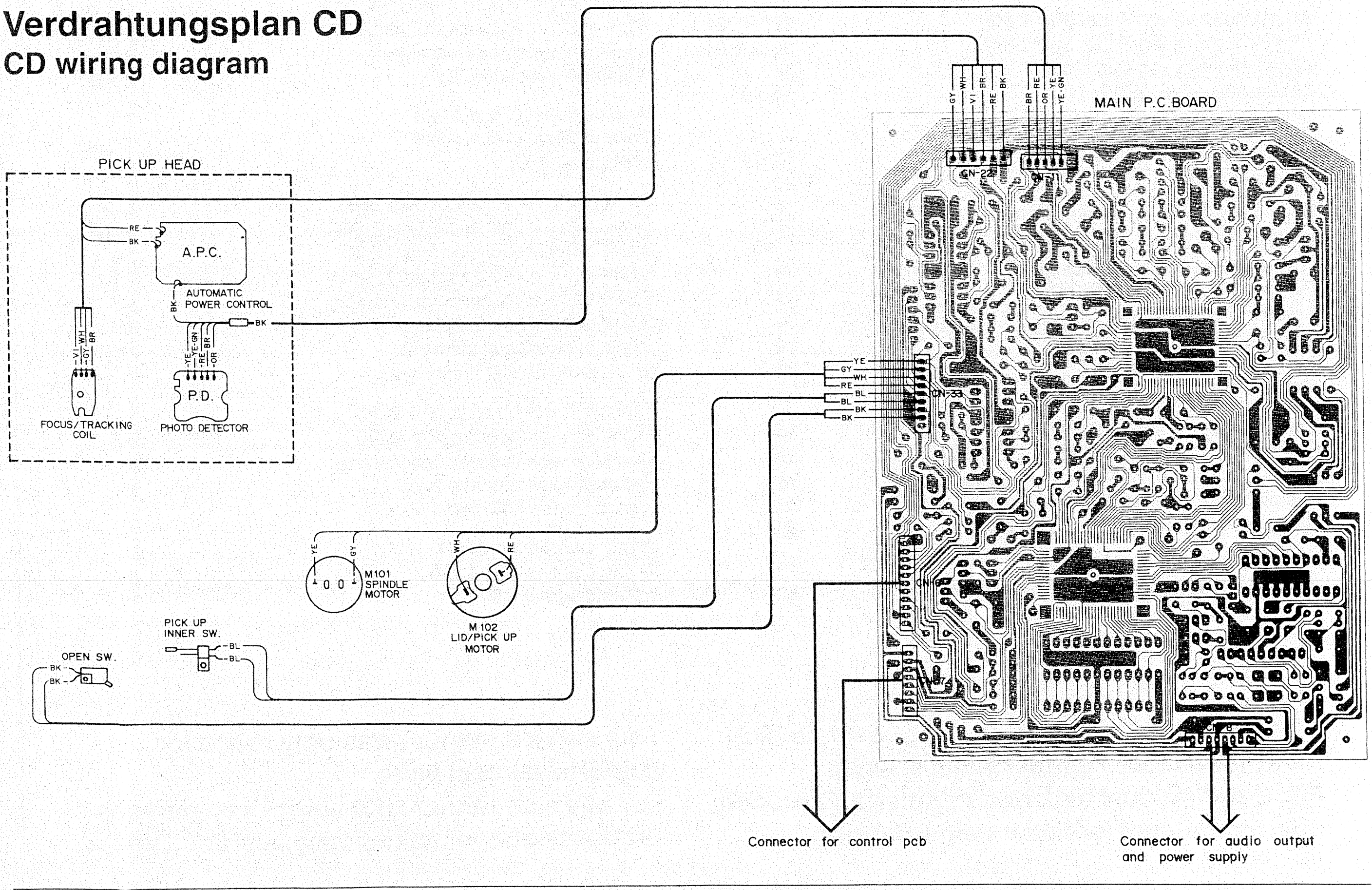


Austrittsöffnung für Laserstrahlung
Discharge orifice for Laser radiation

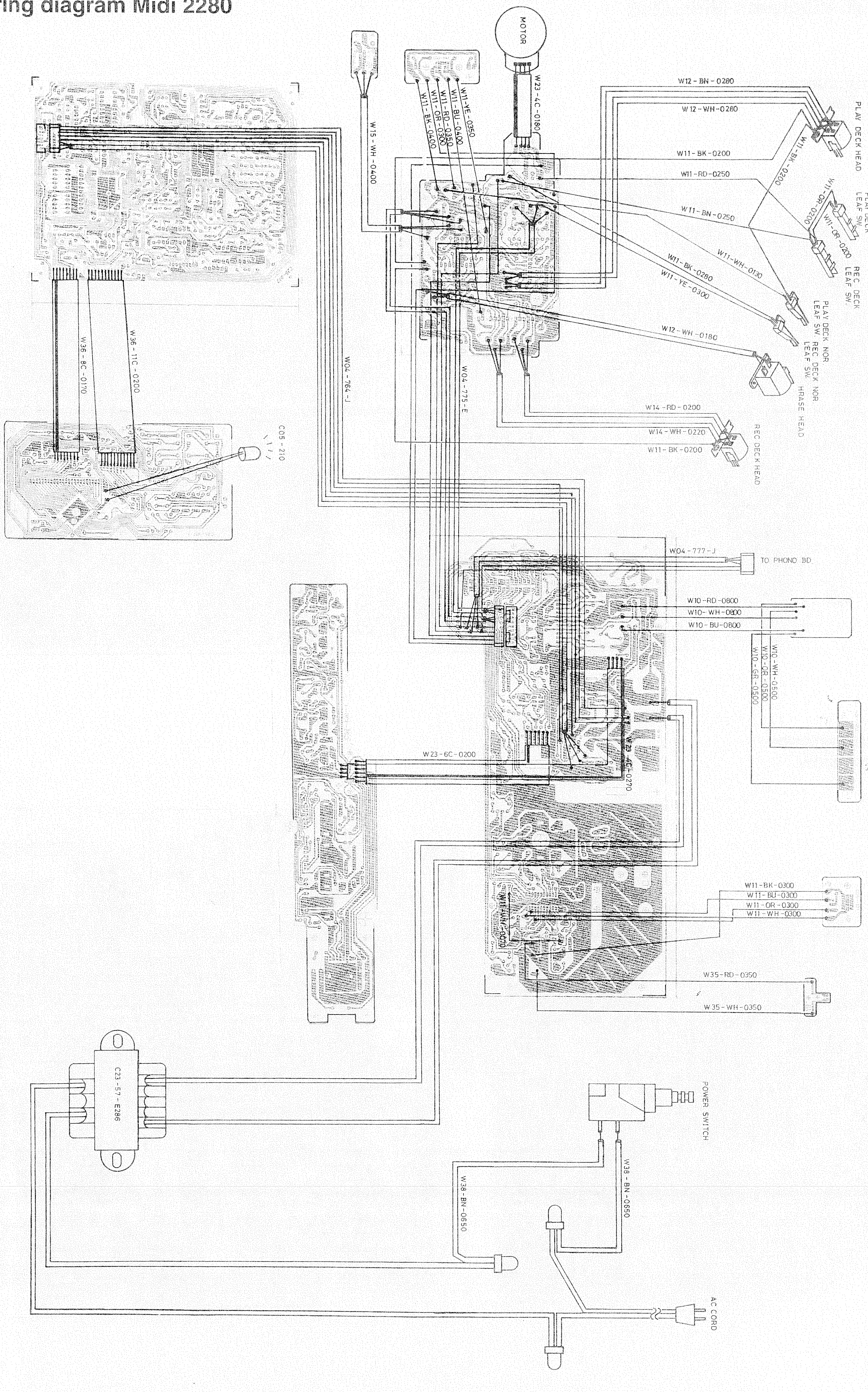
Hinweis für Original-Etikett:
Schrift und Umrandung schwarz, Untergrund gelb.

Indication for original label:
Letters and surrounding black, background yellow.

Verdrahtungsplan CD
CD wiring diagram

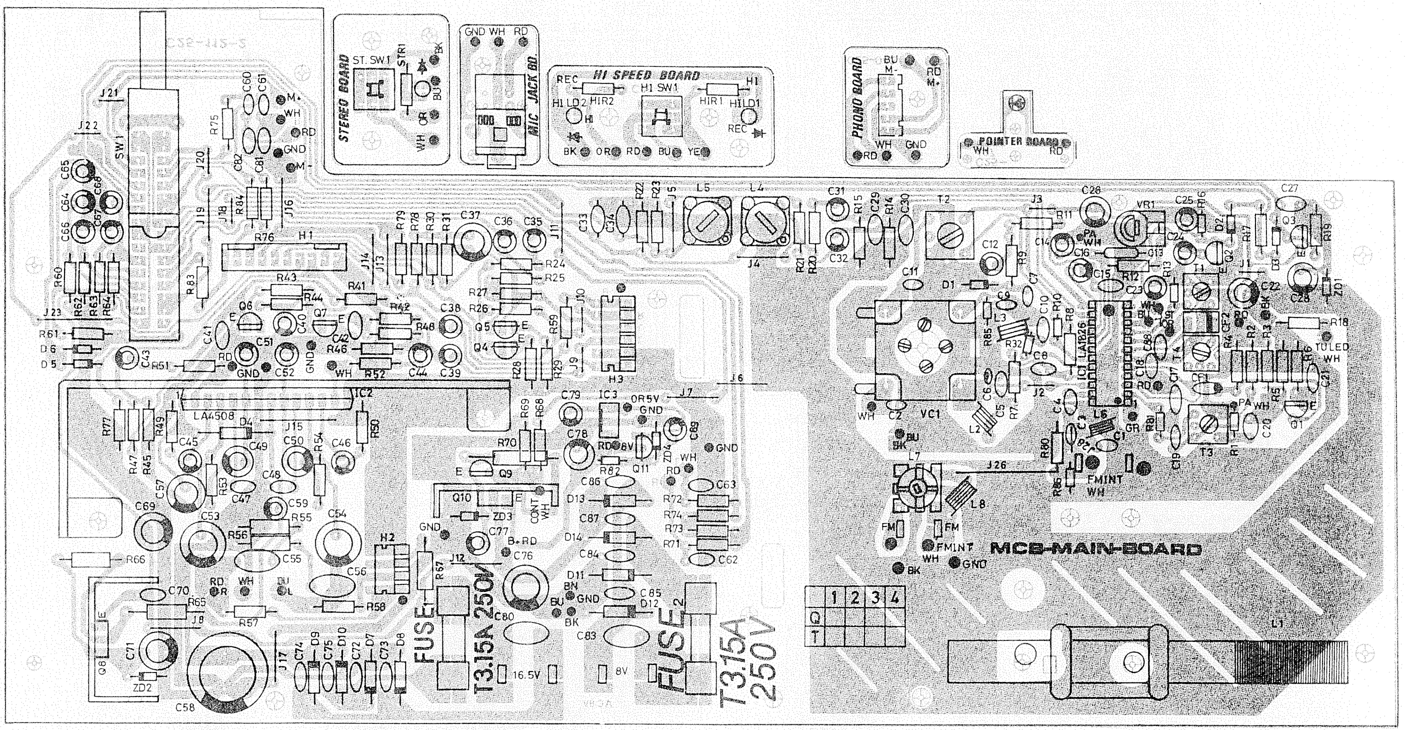

PICK UP HEAD
RE
BK
A.P.C.
AUTOMATIC POWER CONTROL
BK
VI
WH
GY
BR
YE
YE-GN
RE
BR
OR
P.D.
FOCUS/TRACKING COIL
PHOTO DETECTOR
GY
WH
VI
BR
RE
BK
BR
RE
OR
YE
YE-GN
CN-22
CN-21
MAIN P.C.BOARD
YE
GY
WH
RE
BL
BL
BK
BK
CN-33
YE
GY
M101 SPINDLE MOTOR
WH
RE
M 102 LID/PICK UP MOTOR
PICK UP INNER SW.
BL
BL
OPEN SW.
BK
BK
Connector for control pcb
Connector for audio output and power supply

Verdrahtungsplan Midi 2280
Wiring diagram Midi 2280


MOTOR
W23-4C-0180
W15-WH-0400
W11-YE-0350
W11-BU-0400
W11-RD-0350
W11-OR-0300
W11-BK-0400
W12-BN-0280
W12-WH-0280
PLAY DECK HEAD
W11-BK-0200
W11-RD-0250
W11-BK-0200
W11-OR-0200
PLAY DECK LEAF SW.
W11-BN-0250
W11-OR-0200
REC DECK LEAF SW.
W11-WH-0130
W11-BK-0280
W11-YE-0300
PLAY DECK NOR LEAF SW. REC DECK NOR. LEAF SW.
W12-WH-0180
HRASE HEAD
W14-RD-0200
W14-WH-0220
W11-BK-0200
REC DECK HEAD
W36-11C-0200
W36-8C-0170
W04-764-J
W04-775-E
C05-210
W04-777-J
TO PHONO BD
W10-RD-0800
W10-WH-0800
W10-BU-0800
W10-WH-0500
W10-OR-0500
W10-GR-0500
W23-6C-0200
W23-4C-0270
W11-WH-0070
W11-BK-0300
W11-BU-0300
W11-OR-0300
W11-WH-0300
W35-RD-0350
W35-WH-0350
C23-57-E286
POWER SWITCH
W38-BN-0650
W38-BN-0650
AC CORD

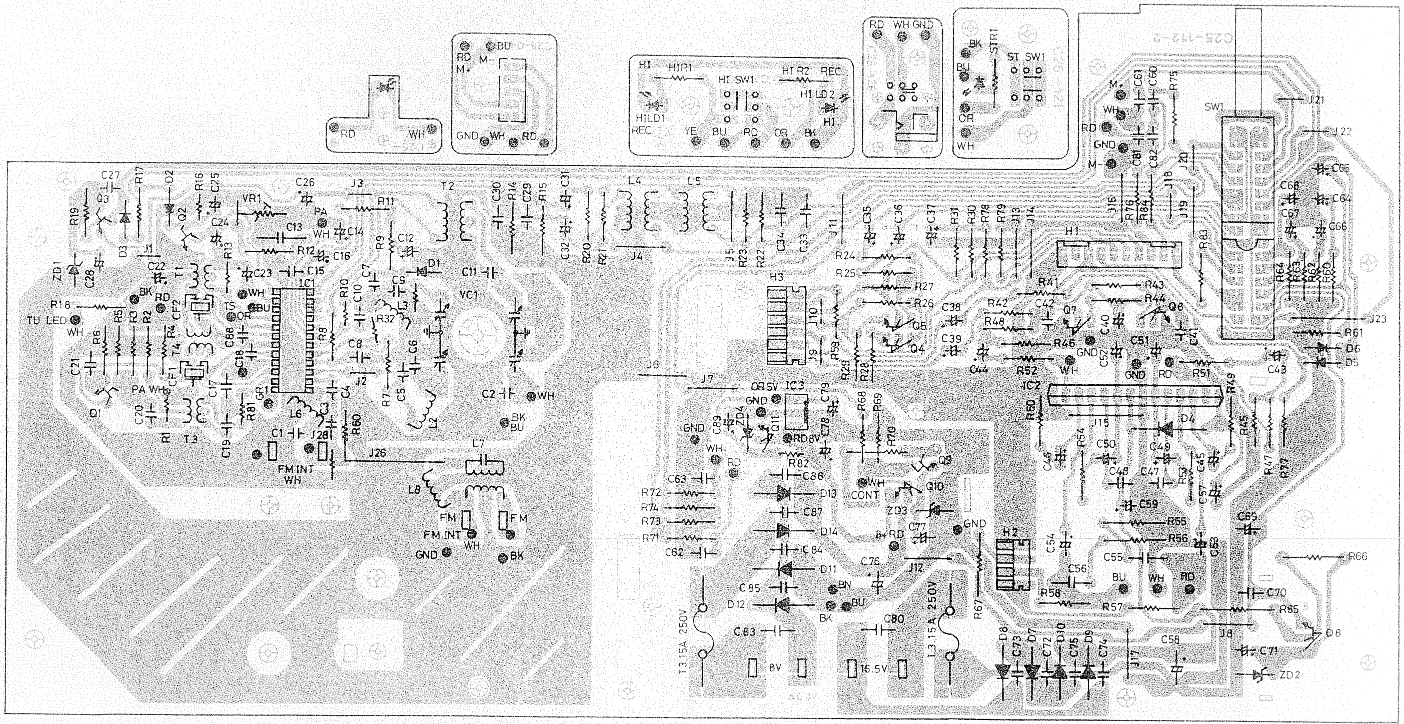
Platinendarstellungen Midi 2280
P.C.B. diagrams Midi 2280

Bestückungsseite
Top view



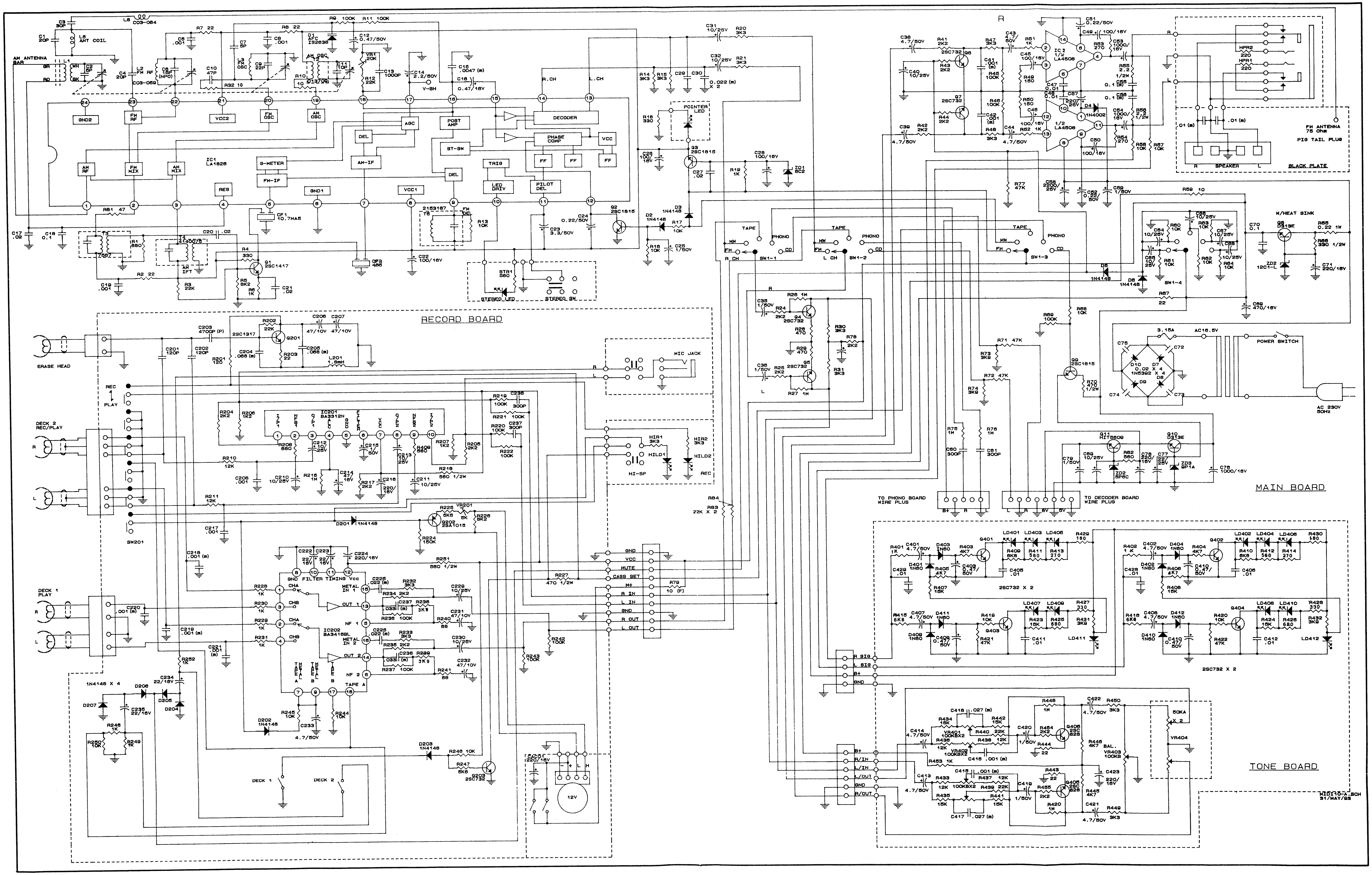
STEREO BOARD
ST. SW1
STR1
MIC JACK BD.
HI SPEED BOARD
PHONO BOARD
POINTER BOARD
MCB-MAIN-BOARD
LA4508
IC2
IC3
LA1826
FUSE
T3.15A 250V
FUSE 2
T3.15A 250V
16.5V
8V
GND
WH
RD
BK
BU
OR
YE
1 2 3 4
Q
T

Leiterbahnseite
Bottom view



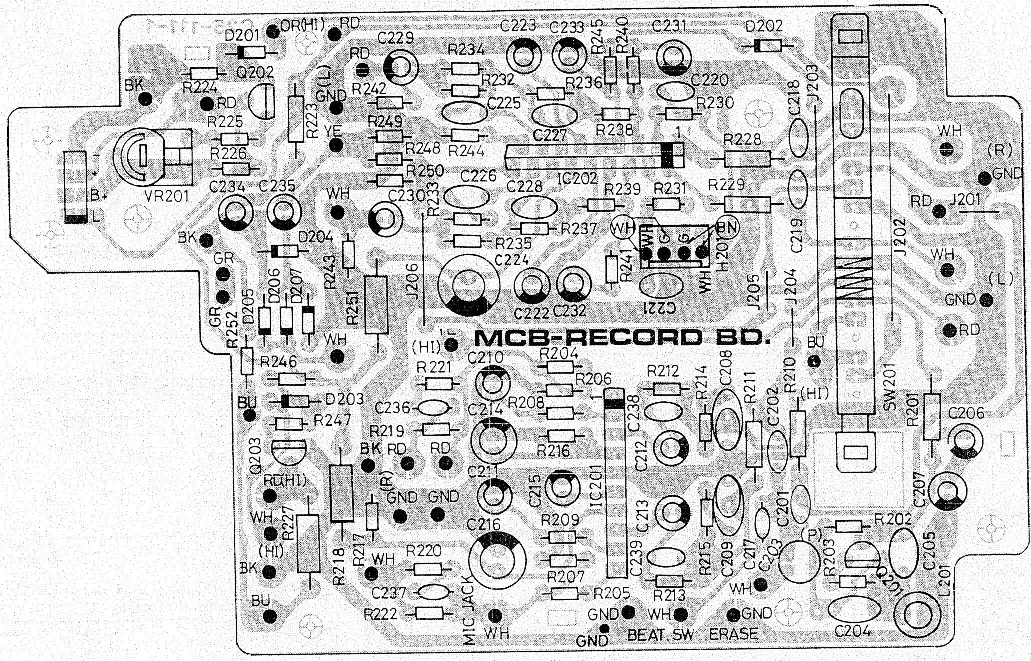
HI
HI SW1
HI LD2
HILD1
REC
ST SW1
STR1
SW1
T3.15A 250V
T3.15A 250V
8V
16.5V
AC 8V
FM INT
GND
WH
BK

Schaltbidl Midi 2280 ohne CD-Spieler
Schematic diagram Midi 2280 without CD player

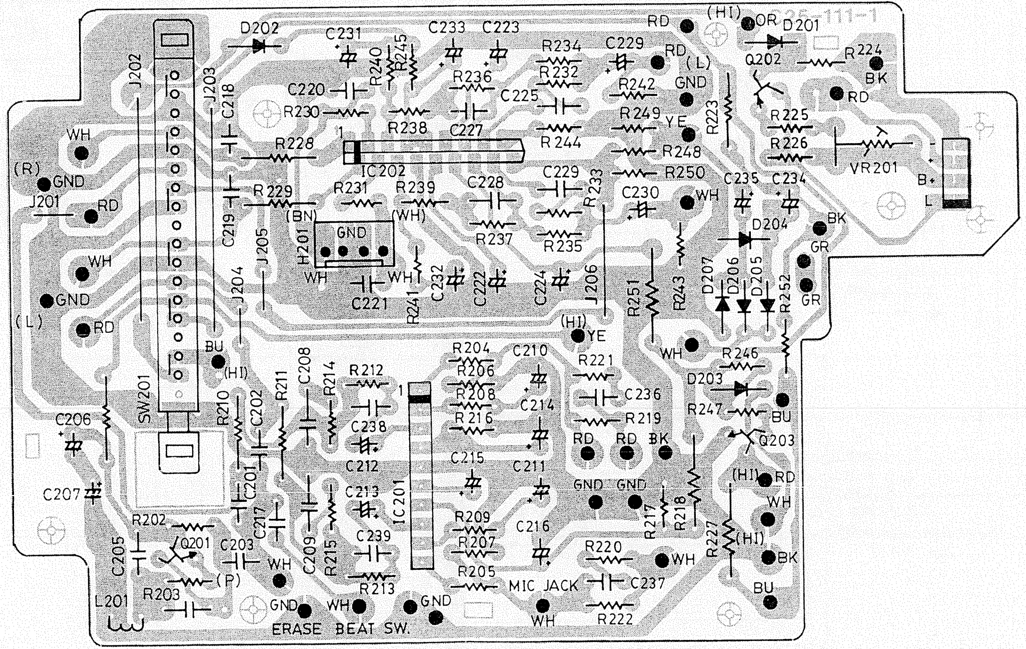

AM ANTENNA BAR
ANT COIL
GND2
FM RF
VCC2
FM OSC
AM OSC
DECODER
POST AMP
PHASE COMP
VCC
AGC
DEL
ST-SW
AM-IF
S-METER
FM-IF
TRIG
LED DRIV
PILOT DEL
FF
AM RF
FM MIX
AM MIX
IC1 LA1828
REG
GND1
VCC1
CF1 10.7MA5
CF2 450
Q1 2SC1417
Q2 2SC1815
Q3 2SC1815
POINTER LED
STEREO LED
STEREO SW
R.CH
L.CH
TAPE
PHONO
CD
FM
MW
SW1-1
SW1-2
SW1-3
SW1-4
IC2 1/2 LA4508
2SC732
HPR2
HPR1
FM ANTENNA 75 Ohm
PIG TAIL PLUG
SPEAKER
BLACK PLATE
W/HEAT SINK
D313E
3.15A
AC16.5V
POWER SWITCH
AC 230V 50Hz
D10 D7 0.02 X 4 1N5392 X 4
RECORD BOARD
ERASE HEAD
MIC JACK
REC
PLAY
DECK 2 REC/PLAY
IC201 BA3312N
HI-SP
SW201
DECK 1 PLAY
IC202 BA3418BL
GND FILTER TIMING Vcc
METAL IN 1
METAL IN 2
OUT 1
OUT 2
NF 1
NF 2
TAPE A
1N4148 X 4
DECK 1
DECK 2
12V
GND
VCC
MUTE
CASS SET
M+
R IN
L IN
R OUT
L OUT
TO PHONO BOARD WIRE PLUG
TO DECODER BOARD WIRE PLUG
MAIN BOARD
2SC732 X 2
TONE BOARD
R SIG
L SIG
B+
R/IN
L/IN
L/OUT
R/OUT
50KA X 2
VR404
BAL.
VR403 100KB
VR401 100KBX2
VR402 100KBX2
M10110-A.SCH 31/MAY/93

Platinendarstellungen Recorderplatine Midi 2280
Record P.C.B. diagram Midi 2280

Bestückungsseite
Top view



Leiterbahnseite
Bottom view



Spannungstabelle IC Midi 2280
Voltage table IC Midi 2280

PIN NO.	IC 1 LA1826	IC 2 LA4508	IC 201 BA3312N	IC 202 BA3416BL	PIN NO.	IC 301 M50930	PIN NO.	IC 301 M50930	PIN NO.	IC 301 M50930
1	1.13	1.90	0.03	0	1	2.24	35	4.80	69	2.24
2	5.32	0.01	0.63	0	2	2.24	36	4.81	70	2.24
3	5.38	1.19	3.57	0	3	2.24	37	4.81	71	2.24
4	1.13	9.81	7.89	0	4	2.24	38	4.82	72	2.24
5	1.13	0.60	7.85	0.62	5	2.24	39	4.82	73	0.06
6	0	1.82	0	0.62	6	2.24	40	4.82	74	2.24
7	1.14	0	0.26	0.10	7	2.24	41	0.07	75	2.24
8	5.38	1.95	3.60	0	8	2.24	42	0.07	76	2.24
9	5.38	1.80	0.63	0.10	9	2.24	43	4.85	77	2.24
10	0.03	0.60	0	9.68	10	2.24	44	4.85	78	2.24
11	4.69	9.71		0.71	11	2.24	45	0.06	79	2.24
12	4.67	1.19		10.1	12	2.24	46	0.06	80	2.24
13	0.85	0.01		4.53	13	2.24	47	4.64		
14	0.87	0		4.57	14	1.51	48	4.66		
15	1.25			0	15	2.97	49	4.84		
16	0.59			0	16	4.43	50	4.88		
17	2.95			0.06	17	4.49	51	0.07		
18	4.10			0.01	18	0.96	52	0.07		
19	5.38				19	0.03	53	4.85		
20	5.04				20	4.89	54	4.22		
21	5.18				21	0.06	55	4.83		
22	5.13				22	0.03	56	4.83		
23	1.02				23	0.06	57	2.23		
24	0				24	0.03	58	2.23		
					25	0.04	59	2.23		
					26	0.15	60	2.23		
					27	6.43	61	2.23		
					28	0.06	62	2.23		
					29	4.89	63	2.23		
					30	2.22	64	2.23		
					31	2.34	65	2.24		
					32	0.06	66	2.24		
					33	4.87	67	2.24		
					34	4.47	68	2.24		

TR	B	C	E
Q1	1.40	5.16	0.71
Q2	0	4.69	0
Q3	6.11	12.10	5.39
Q4	1.11	3.91	0.49
Q5	1.13	3.83	0.50
Q6	0	0	0
Q7	0	0	0
Q8	12.70	19.51	12.09
Q9	0	12.11	0.25
Q10	0.32	12.10	0
Q11	0	0	0
Q201	0.31	0.30	0
Q202	6.48	7.10	7.10
Q203	0.76	0.09	0
Q301	0.05	4.80	0.05
Q401	0.74	0.25	0
Q402	0.42	11.45	0
Q403	0	11.46	0
Q404	0	11.45	0
Q405	0.65	4.90	0.02
Q406	0.67	3.98	0

Ersatzteilliste elektrisch Midi 2280
Spare parts list electrical Midi 2280

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisguppe Price-key
57 153 00	Tunerplatine	Main board assembly	46	E 7
57 154 00	Recorderplatine	Record board assembly	35	D 3
57 155 00	Klangregelplatine	Tone board assembly	73	E 0
57 190 00	Bedienteilplatine CD	CD display board assembly	15	E 7
57 156 00	IC LA 1826	IC LA 1826	IC 1	B 4
57 157 00	IC LA 4508	IC LA 4508	IC 2	B 4
60 274 00	IC BA 3312 N	IC BA 3312 N	IC 201	B 1
37 833 00	IC BA 3416 BL	IC BA 3416 BL	IC 202	B 8
60 358 00	IC M 50930 – 123 FP	IC M 50930 – 123 FP	IC 301	D 6
29 018 00	Trans 2 SC 1417 H	Trans 2 SC 1417 H	Q 1	A 3
21 736 00	Trans 2 SC 1815	Trans 2 SC 1815	Q 2, 3, 9	A 6
29 019 00	Trans 2 SC 732 TM	Trans 2 SC732 TM	Q 4–7	A 3
13 555 00	Trans 2 SD 313 E	Trans 2 SD 313 E	Q 8, 10	A 8
60 397 00	Trans HIT 5609	Trans HIT 5609	Q 11	A 3
29 022 00	Trans 2 SC 1317 S	Trans 2 SC 1317 S	Q 201	A 4
12 959 00	Trans 2 SA 1015 Y	Trans 2 SA 1015 Y	Q 202	A 6
29 019 00	Trans 2 SC 732 TM	Trans 2 SC 732 TM	Q 203, 401–404	A 3
48 415 00	Trans 2 SC 3400	Trans 2 SC 3400	Q 301	A 2
03 726 00	Trans 2 SC 828 S	Trans 2 SC 828 S	Q 405–406	A 9
57 158 00	Diode 1 S 2638	Diode 1 S 2638	D 1	A 1
11 241 00	Diode 1 N 4148	Diode 1 N 4148	D 2, 3, 5, 6	A 2
11 239 00	Diode 1 N 4002	Diode 1 N 4002	D 4, 7–10	A 2
11 241 00	Diode 1 N 4148	Diode 1 N 4148	D 201–207, 301–312	A 2
70 047 00	Diode 21 K 60	Diode 21 K 60	D 401–412	B 1
40 679 00	Zenerdiode MTZ 6,2	Zenerdiode MTZ 6,2	ZD 1	A 1
40 680 00	Zenerdiode MTZ 12	Zenerdiode MTZ 12	ZD 2	A 1
37 759 00	Zenerdiode MTZ 9 P 1	Zenerdiode MTZ 9 P 1	ZD 3	A 2
34 942 00	Zenerdiode MTZ 5 P 6	Zenerdiode MTZ 5 P 6	ZD 4	A 3
70 049 00	LED SLR 34 YY 3 F gelb	LED SLR 34 YY 3 F yellow	LD 401–410	A 3
70 050 00	LED SLR 344 R 3 F rot	LED SLR 344 R 3 F red	LD 411–412	A 3
57 159 00	AM Spule	AM coil	L 1	A 1
60 285 00	FM Drossel	2.5 T 5 mm FM Coil	L 3	A 0
60 284 00	Drossel Mixer	3.5 T 5 mm Mixercoil	L 6	A 0
32 343 00	Drossel 1,8 mH	187 LV-182 Coil 1.8 mH	L 201	A 5
57 160 00	Drehko LF 2220 T 2-AH 21	LF 2220 T 2-AH 21	VC 1	B 4
22 965 00	Filter Keramik SFE 10,7 MHz	SFE 10.7 MS 3	CF 1	B 1
24 996 00	Filter Keramik SFU 465 B	SFU – 465 B	CF 2	A 7
10 180 00	Schiwi 2,2 Ohm/½ W	Resistor 2.2 Ohm/½ W	R 55, 56	A 1
34 084 00	Schiwi 0,22 Ohm/1 W	Resistor 0.22 Ohm/1 W	R 65	A 3
38 162 00	Schiwi 330 Ohm/½ W	Resistor 330 Ohm/½ W	R 66	A 0
40 132 00	Schiwi 470 Ohm/½ W	Resistor 470 Ohm/½ W	R 70	A 2
10 590 00	Schiwi 10 Ohm/½ W	Resistor 10 Ohm/½ W	R 79	A 0
29 622 00	Trimmpoti 20 kOhm	Semi-fixed 20 kOhm	VR 1	A 3
60 051 00	Trimmpoti 5 kOhm	Semi-fixed 5 kOhm	VR 201	A 3
57 161 00	Drehwi Bass, Treble	Rotary resistor 100 KB × 2	VR 401, 402	B 1
57 162 00	Drehwi Balance	Rotary resistor 100 KB × 1	VR 403	B 0
60 305 00	Drehwi Lautstärke	Rotary resistor 50 KA × 2	VR 404	B 2
57 163 00	Drehschalter Function	Rotary switch		B 6
70 054 00	Schalter	Tact switch	DIV	A 6
60 790 00	Taster	Tact switch	DIV	A 2
26 982 00	Netzschalter	Power switch		B 2

Ersatzteilliste elektrisch Midi 2280
Spare parts list electrical Midi 2280

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisguppe Price-key
57 164 00	Ferritantenne kpl.	Antenna bar		A 9
32 330 00	Kopfhörerbuchse 6,3 mm	Headphone jack 6.3 mm		B 1
57 165 00	Mikrofonbuchse 3,5 mm	Microphone jack 3.5 mm		A 9
57 166 00	Klemmanschluß LS 4fach	Speaker socket		B 2
57 167 00	Netztrafo Midi 2280	PWR X'fmr EI-57		C 9
60 788 00	Display CD	LCD display CD		D 2
57 191 00	Lampe Display CD 5,8 V/200 mA	Lamp 5.8 V/200 mA		A 1
29 048 00	A/W Schiebeschalter	Recording switch		B 0

Ersatzteilliste elektrisch Midi 2290
Spare parts list electrical Midi 2290

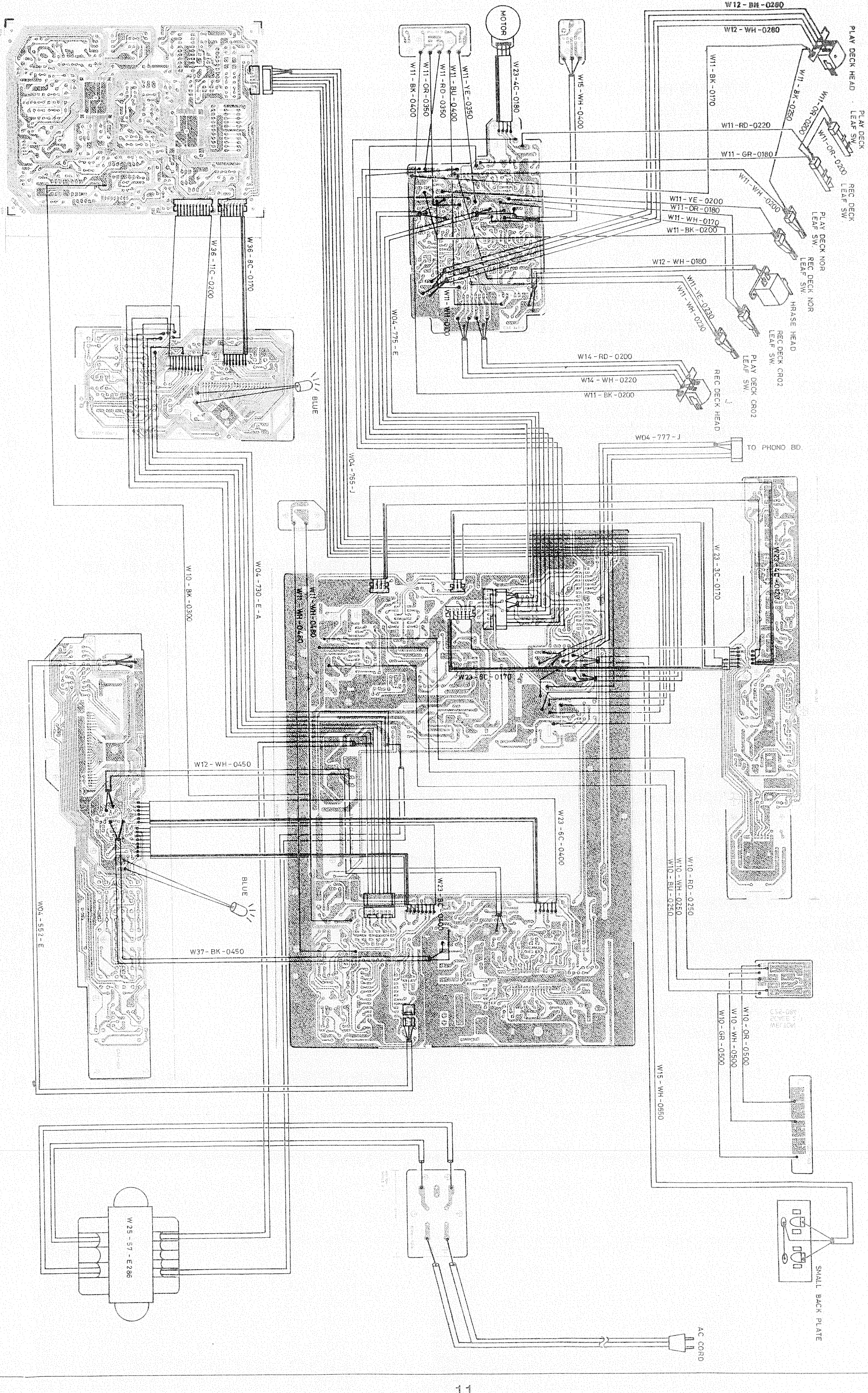
Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisguppe Price-key
57 192 00	Tunerplatine	Main board assembly	46	F 9
57 193 00	Recorderplatine	Record board assembly	35	D 6
57 194 00	Klangregelplatine	Tone board assembly	73	E 1
57 141 00	Bedienteilplatine Tuner	Tuner key board assembly	47	E 8
57 190 00	Bedienteilplatine CD	CD display board	15	E 7
65 871 00	IC LA 1851	IC LA 1851	IC 1	C 2
57 195 00	IC PT 2250	IC PT 2250	IC 2	B 3
57 157 00	IC LA 4508	IC LA 4508	IC 3	B 4
57 196 00	IC PT 2253	IC PT 2253	IC 4	B 3
60 274 00	IC BA 3312 N	IC BA 3312 N	IC 201	B 1
37 833 00	IC BA 3416 BL	IC BA 3416 BL	IC 202	B 8
60 358 00	IC M 50930-123 FP	IC M 50930-123 FP	IC 301	D 6
48 364 00	IC TC 9304 F-027	IC TC 9304 F-027	IC 501	C 9
29 018 00	Trans 2 SC 1417 H	Trans 2 SC 1417 H	Q 1, 2	A 3
21 736 00	Trans 2 SC 1815 O	Trans 2 SC 1815 O	Q 3, 8, 10	A 6
12 959 00	Trans 2 SA 1015 Y	Trans 2 SA 1015 Y	Q 4, 9	A 6
29 019 00	Trans 2 SC 732 TM	Trans 2 SC 732 TM	Q 5–7, 11–13	A 3
13 555 00	Trans 2 SD 313 E	Trans 2 SD 313 E	Q 15, 18	A 8
21 736 00	Trans 2 SC 1815 O	Trans 2 SC 1815 O	Q 16, 17, 19	A 6
60 397 00	Trans HIT 5609	Trans HIT 5609	Q 20	A 3
03 726 00	Trans 2 SC 828 S	Trans 2 SC 828 S	Q 21, 22, 405,406	A 9
21 736 00	Trans 2 SC 1815 O	Trans 2 SC 1815 O	Q 23–31, 33, 34	A 6
29 022 00	Trans 2 SC 1317	Trans 2 SC 1317	Q 32, 201	A 4
29 019 00	Trans 2 SC 732 TM	Trans 2 SC 732 TM	Q 202, 204	A 3
21 736 00	Trans 2 SC 1815 O	Trans 2 SC 1815 O	Q 203	A 6
12 959 00	Trans 2 SC 1015 Y	Trans 2 SC 1015 Y	Q 205, 506	A 6
29 022 00	Trans 2 SC 1317 S	Trans 2 SC 1317 S	Q 206, 207	A 4
29 019 00	Trans 2 SC 732 TM	Trans 2 SC 732 TM	Q 208, 401–404	A 3
48 415 00	Trans 2 SC 3400	Trans 2 SC 3400	Q 301, 502	A 2
29 018 00	Trans 2 SC 1417 H	Trans 2 SC 1417 H	Q 501	A 3
21 736 00	Trans 2 SC 1815 O	Trans 2 SC 1815 O	Q 503-505	A 6
22 955 00	Diode SVC 321 SP	Diode SVC 321 SP	D 1, 2	B 4
11 241 00	Diode 1 N 4148	Diode 1 N 4148	D 3–5, 11–17	A 2
11 239 00	Diode 1 N 4002	Diode 1 N 4002	D 6	A 2
44 722 00	Diode 1 N 5392	Diode 1 N 5392	D 7–10	A 3
70 047 00	Diode 21 K 60-B	Diode 21 K 60-B	D 201, 202, 401–412	B 1
11 241 00	Diode 1 N 4148	Diode 1 N 4148	D 203–519	A 2
37 758 00	Zenerdiode MTZ 13 B	Zenerdiode MTZ 13 B	ZD 1	A 1
34 942 00	Zenerdiode MTZ 5,6 C	Zenerdiode MTZ 5.6 C	ZD 2	A 3
37 759 00	Zenerdiode MTZ 9,1 Z	Zenerdiode MTZ 9.1 Z	ZD 3	A 2
34 942 00	Zenerdiode MTZ 5,6 B	Zenerdiode MTZ 5.6 B	ZD 4, 5	A 3
34 991 00	Zenerdiode MTZ 11 B	Zenerdiode MTZ 11 B	ZD 6	A 2
40 679 00	Zenerdiode MTZ 6,2 B	Zenerdiode MTZ 6.2 B	ZD 501	A 1
70 050 00	LED SLR 344 R3F rot	LED SLR 344 R3F red	DIV	A 3
70 049 00	LED SLR 34 YY 3 F gelb	LED SLR 34 YY 3 F yellow	Div	A 3

Ersatzteilliste elektrisch Midi 2290
Spare parts list electrical Midi 2290

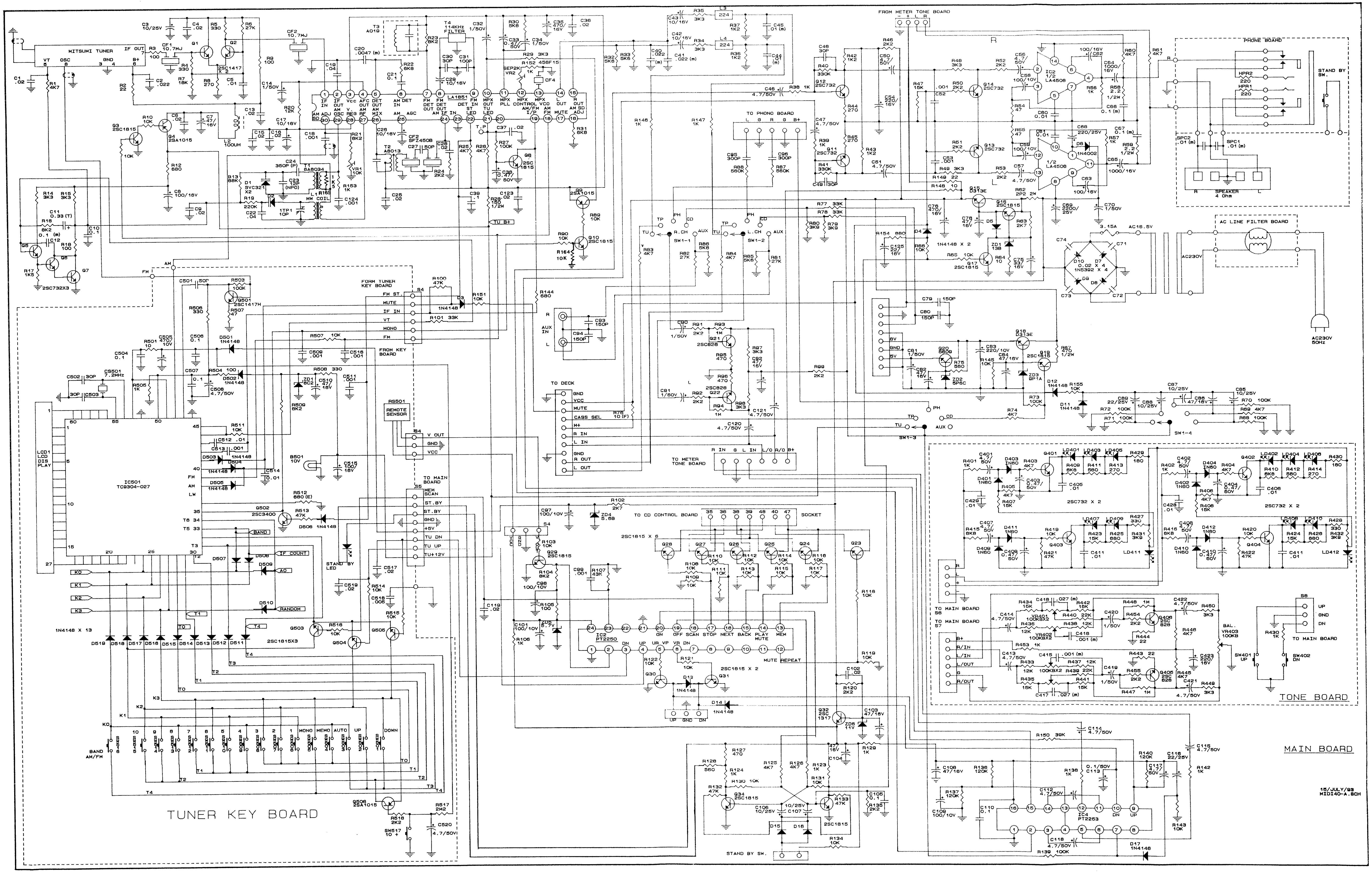
Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisguppe Price-key
57 197 00	MW Antennen Spule	MW ant. coil	L 1	A 1
57 198 00	Filter 100 µH	Choke coil	L 2	A 1
57 199 00	Filter FB-100	FM-100	L 3, 4	A 8
60 282 00	Drossel RWO 6 A 8034 N	6 A 8034 N	T 1	A 4
60 408 00	ZF-Transformator A 8013 EK	A 8013 EK	T 2	A 6
60 409 00	ZF-Transformator A 8019 BZ H	A 019 BZH	T 3	A 7
70 866 00	Filter 114 kHz	5307-HO10	T 4	A 4
60 279 00	Keramikfilter AM 10,7 MHz	SFE 10.7 MJ-A	CF 1, 2	A 4
60 404 00	Keramikfilter SFZ 450 B	SFZ 450 B	CF 3	A 9
65 245 00	Keramikfilter CSB 456 F 15	CSB 456 F 15	CF 4	A 4
32 341 00	Oszillatorspule CAN 1000 N	1 A 1000 N	T 201	A 7
70 274 00	Keramikschwingkreis 4,32 MHz	CSA 4.32 MG	CS 301	B 8
60 406 00	Keramikfilter 7,2 MHz	7.2 MHz	CS 501	B 2
34 084 00	Widerstand 0,22 Ohm/1 W	Resistor 0,22 Ohm/1 W	R 62	A 3
10 590 00	Widerstand 10 Ohm/1/2 W	Resistor 10 Ohm/1/2 W	R 76	A 0
11 787 00	Widerstand 100 Ohm/1/2 W	Resistor 100 Ohm/1/2 W	R 228	A 0
21 665 00	Widerstand 33 Ohm/1 W	Resistor 33 Ohm/1 W	R 510	A 3
37 023 00	Trimmpoti 10 kOhm	SFR 10 kOhm	VR 1	A 3
60 216 00	Trimmpoti 2 kOhm	SFR 2 kOhm	VR 2	A 3
60 051 00	Trimmpoti 5 kOhm	SFR 5 kOhm	VR 201	A 3
57 161 00	Drehwi Bass, Treble	Rotary resistor 100 KB × 2	VR 401, 402	B 1
57 162 00	Drehwi Balance	Rotary resistor 100 KB × 1	VR 403	B 0
70 054 00	Schalter	Switch KPT-2201	STSW 1	A 6
60 790 00	Taster	Tact switch	DIV	A 2
57 163 00	Drehschalter Function	Rotary switch		B 6
38 285 00	FM Tuner FE 416-G 01	FE 416 G 01	Tuner	D 5
57 164 00	Ferritantenne kpl.	Ferrite bar		A 9
32 330 00	Kopfhörerbuchse 6,3 mm	Headphone jack 6.3 mm		B 1
57 165 00	Mikrophonbuchse 3,5 mm	Microphone jack 3.5 mm		A 9
57 166 00	Klemmanschluß IS 4-fach	Speaker socket		B 2
57 167 00	Netztrafo Midi 2290	X'FMR EI-57	68	C 9
60 411 00	Display Tuner	LCD display Tuner		D 2
60 244 00	Lampe Display 10 V/110 mA	Lamp 10 V/110 mA		A 6
60 788 00	Display CD	LCD display CD		D 2
57 191 00	Lampe Display 5,8 V/200 mA	Lamp 5,8 V/200 mA		A 1
29 048 00	AIW Schiebeschalter	Recording switch		B 0
60 871 00	Netzdrossel 2, 5 µH	AC line filter coil		B 5
57 008 00	Infrarot-Empfänger	IR-receiver RPM-638 CBL	RS 501	B 4

Verdrahtungsplan Midi 2290

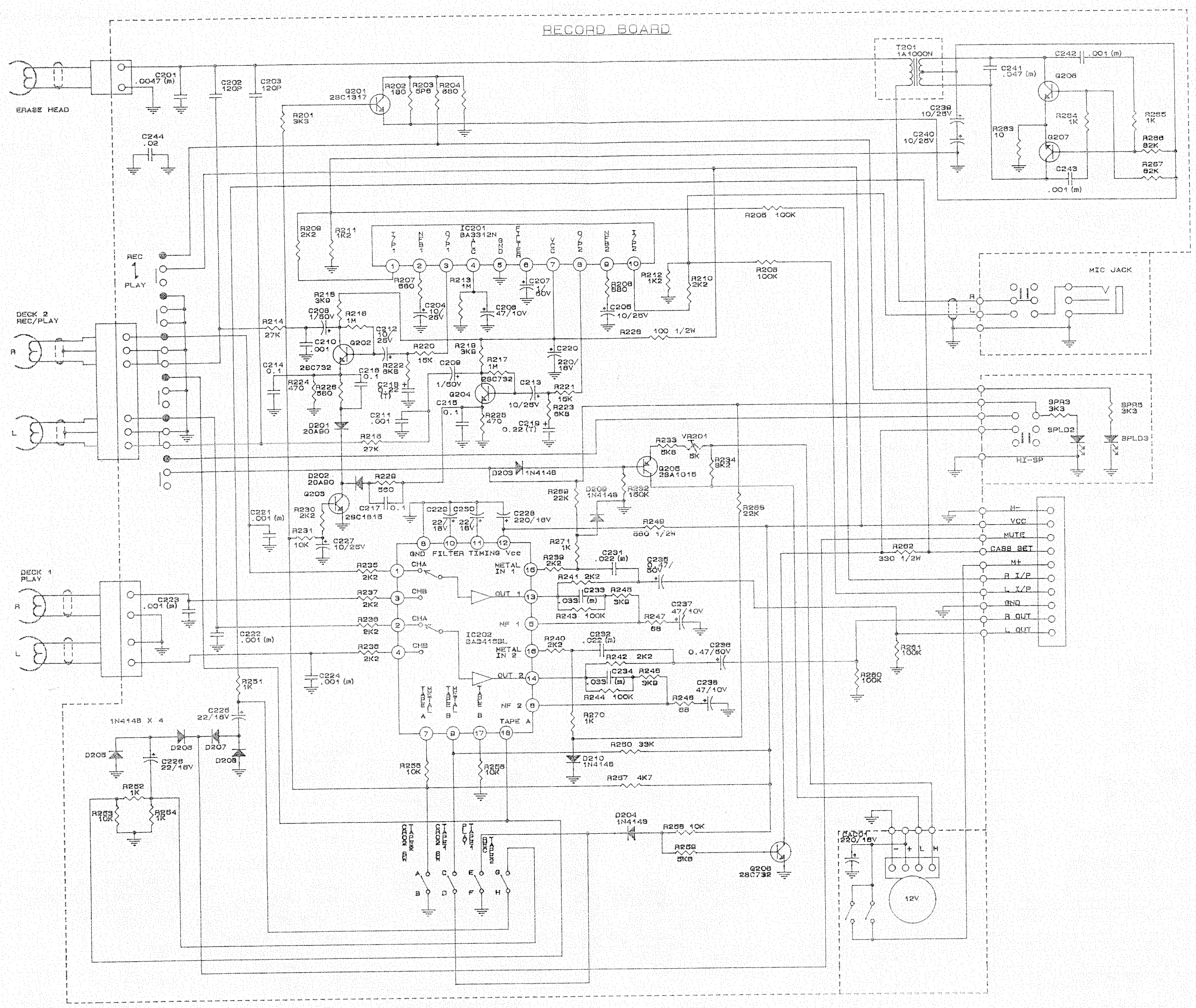
Wiring diagram Midi 2290


W12-BN-0280
W12-WH-0280
PLAY DECK HEAD
PLAY DECK LEAF SW.
W11-BK-0170
W11-BK-0250
W11-OR-0250
W11-OR-0200
REC DECK LEAF SW.
W11-RD-0220
W11-GR-0180
W11-WH-0200
W11-YE-0200
W11-OR-0180
W11-WH-0170
W11-BK-0200
PLAY DECK NOR LEAF SW.
REC DECK NOR LEAF SW.
W12-WH-0180
ERASE HEAD
W11-YE-0230
W11-WH-0230
REC DECK CR02 LEAF SW.
PLAY DECK CR02 LEAF SW.
W14-RD-0200
W14-WH-0220
W11-BK-0200
REC DECK HEAD
W04-777-J
TO PHONO BD.
MOTOR
W23-4C-0180
W15-WH-0400
W11-BK-0400
W11-OR-0350
W11-RD-0350
W11-BU-0400
W11-YE-0350
W04-775-E
W36-11C-0200
W36-8C-0170
BLUE
W04-765-J
W10-BK-0300
W04-730-E-A
W23-3C-0170
W23-8C-0170
W12-WH-0450
W23-6C-0400
W10-RD-0250
W10-WH-0250
W10-BU-0250
BLUE
W04-552-E
W37-BK-0450
W10-OR-0500
W10-WH-0500
W10-GR-0500
W15-WH-0550
W25-57-E286
SMALL BACK PLATE
AC CORD

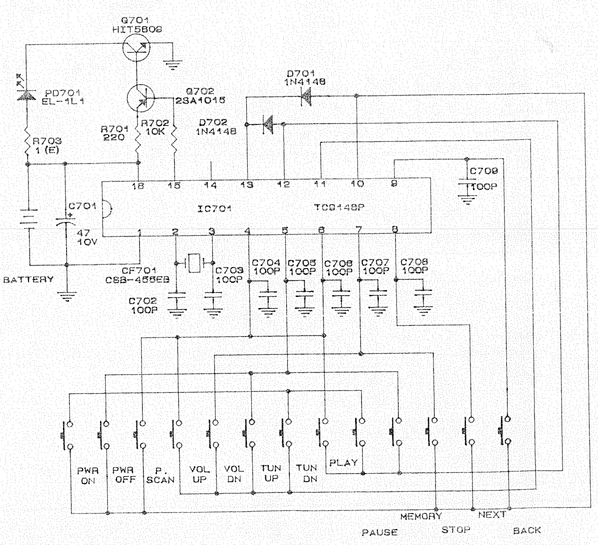
Schaltbild Midi 2290 ohne CD-Spieler
Schematic diagram Midi 2290 without CD player


MITSUMI TUNER
FROM METER TONE BOARD
PHONE BOARD
STAND BY SW.
SPEAKER 4 ohm
AC LINE FILTER BOARD
AC230V 50Hz
TO PHONO BOARD
TO DECK
TO METER TONE BOARD
FORM TUNER KEY BOARD
FROM KEY BOARD
TO MAIN BOARD
REMOTE SENSOR
IC501 TC9304-027
LCD1 LCD DIS PLAY
TO CD CONTROL BOARD
SOCKET
IC2 PT2250
IC4 PT2253
LA1851
LA4508
TONE BOARD
MAIN BOARD
TUNER KEY BOARD
15/JULY/93 MIDI40-A.SCH

Schaltbild Recorderplatine Midi 2290
Schematic diagram record board Midi 2290

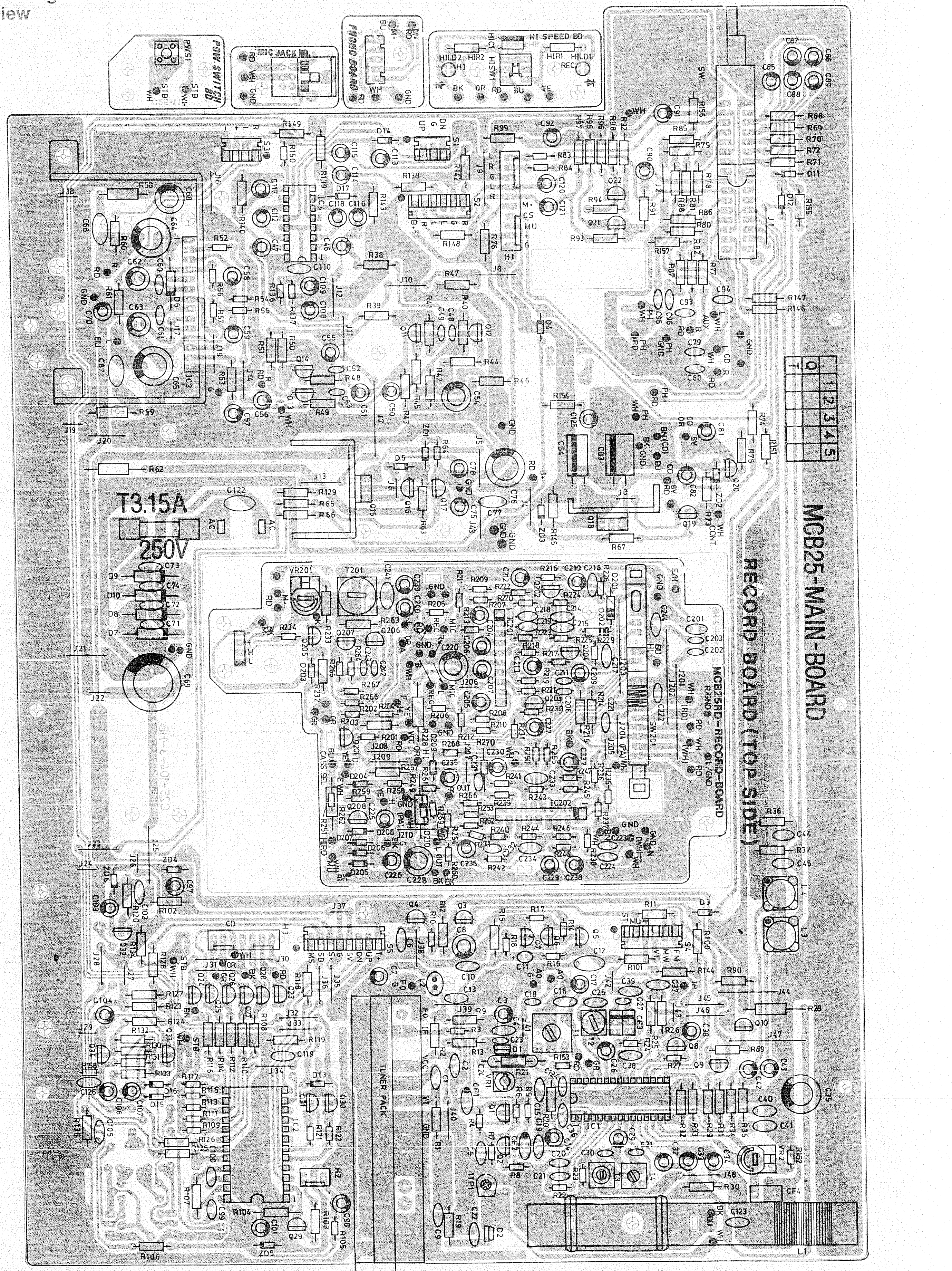

RECORD BOARD
ERASE HEAD
DECK 2 REC/PLAY
DECK 1 PLAY
REC
PLAY
MIC JACK
IC201 BA3312N
IC202 BA3416BL
T201
HI-SP
12V

Schaltbild Fernbedienungsgeber Midi 2290
Schematic diagram remote hand set Midi 2290


Q701 HIT5806
Q702 2SA1015
D701 1N4148
D702 1N4148
PD701 EL-1L1
IC701 TC9148P
C701 47 10V
CF701 CSB-455E3
BATTERY
PWR ON
PWR OFF
P. SCAN
VOL UP
VOL DN
TUN UP
TUN DN
PLAY
MEMORY
PAUSE
STOP
NEXT
BACK

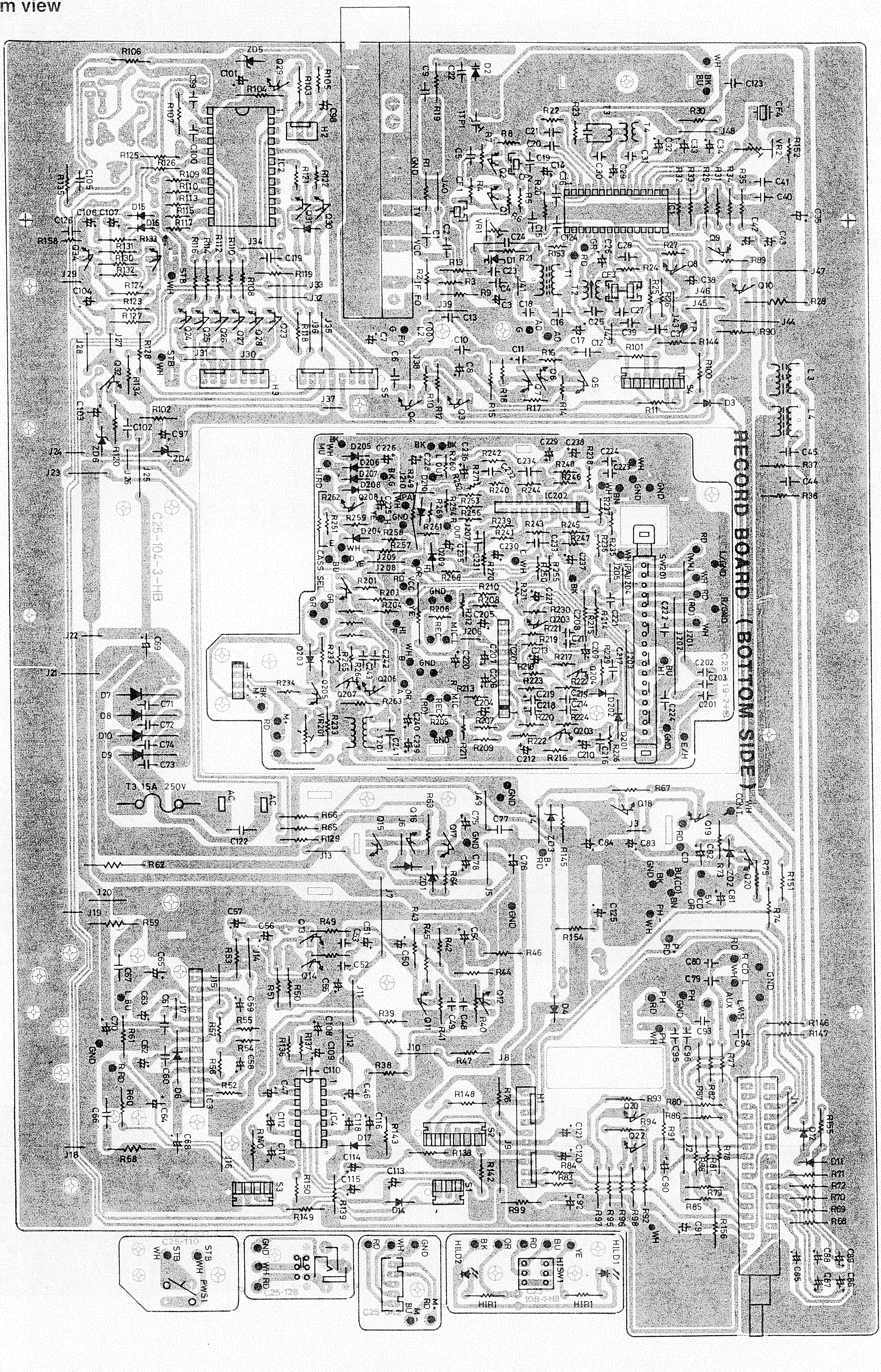
Platinendarstellung Grundplatine/Recorderplatine Midi 2290
Main P.C.B./record P.C.B. diagram Midi 2290

Bestückungsseite
Top view


POW.SWITCH BD
MIC JACK BD
PHONO BOARD
HI SPEED BD
T3.15A
250V
TUNER PACK
MCB25-MAIN-BOARD
RECORD BOARD (TOP SIDE)
MCB25RD-RECORD-BOARD

Platinendarstellung Grundplatine/Recorderplatine Midi 2290
Main P.C.B./record P.C.B. diagram Midi 2290

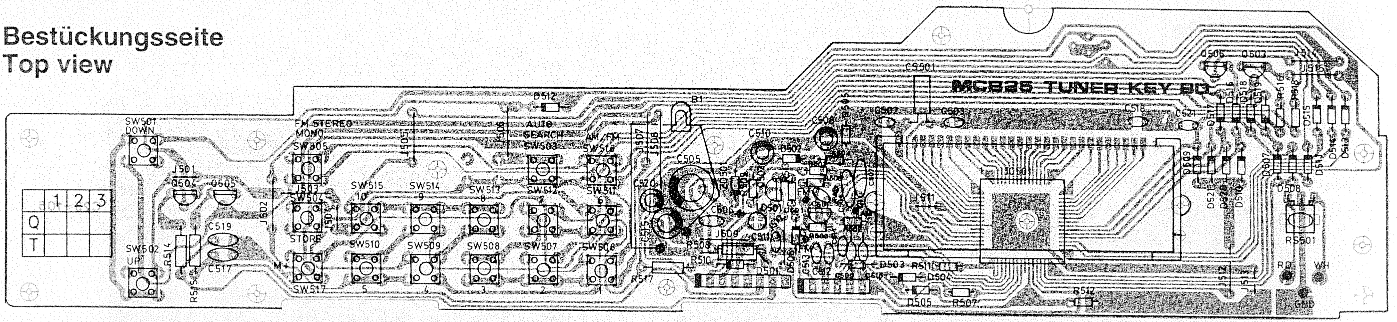
Leiterbahnseite
Bottom view


RECORD BOARD (BOTTOM SIDE)
C25-104-3-HB
T3.15A 250V
AC
IC2
IC1
IC3
IC4
IC202
C25-110
STB
WH
PWS1
C25-128
GND
WH RD
HILD2
HILD1
HISW1
HIR1
C25-108-1-HB

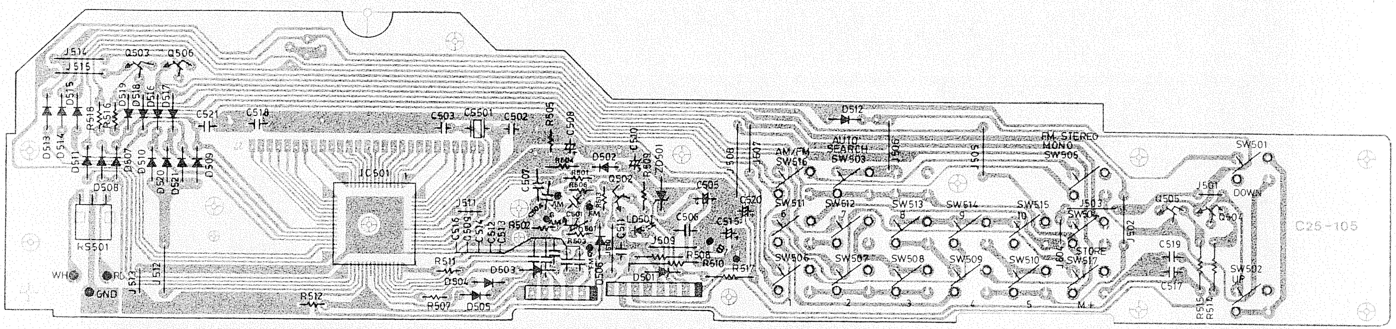
Platinendarstellung Bedienteilplatine Tuner Midi 2290

Tuner key P.C.B. diagram Midi 2290

Bestückungsseite
Top view


MCB26 TUNER KEY BD
SW501 DOWN
SW502 UP
FM STEREO MONO SW505
AUTO SEARCH SW503
AM/FM SW516
STORE
M+
IC501
RD
WH
GND

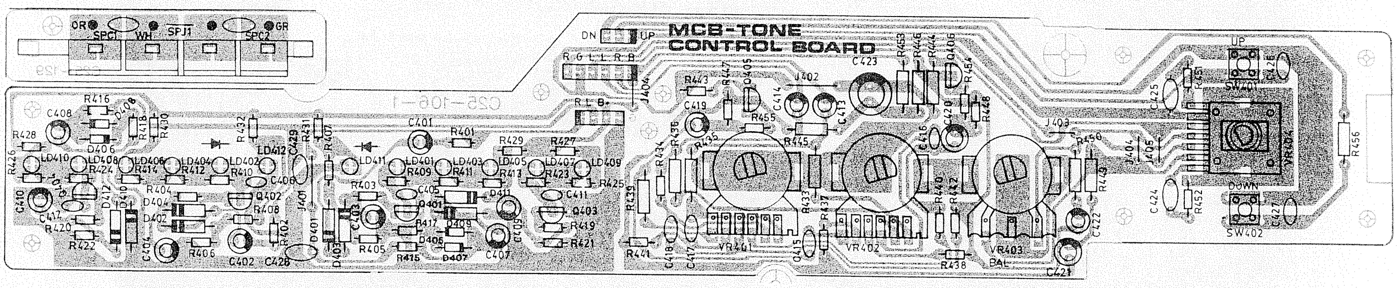
Leiterbahnseite
Bottom view


C25-105
IC501
AUTO SEARCH SW503
AM/FM SW516
FM STEREO MONO SW505
SW501 DOWN
SW502 UP
STORE
M+
WH
RD
GND

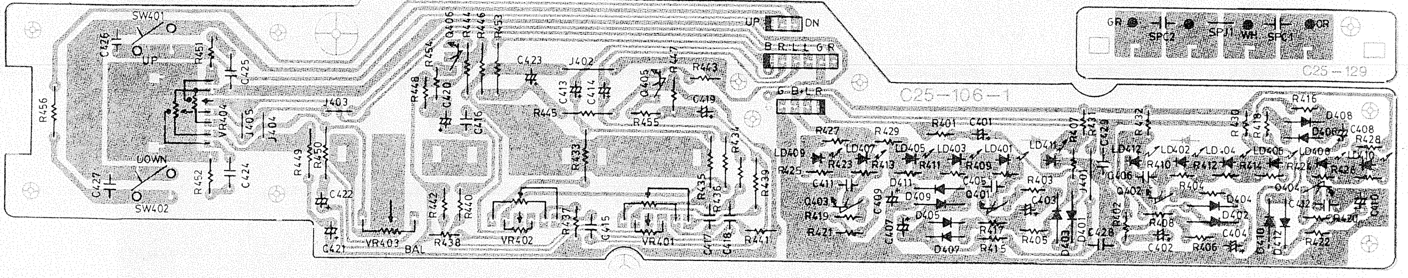
Platinendarstellung Klangregelplatine

Tone control P.C.B. diagram

Bestückungsseite
Top view


MCB-TONE CONTROL BOARD
C25-106-1
C25-129
OR
SPC1
WH
SPJ1
SPC2
GR
DN
UP
R G L L R B
VR401
VR402
VR403
BAL
SW402
DOWN

Leiterbahnseite
Bottom view


C25-106-1
C25-129
SW401
UP
DOWN
SW402
GR
SPC2
SPJ1
WH
SPC1
OR
B R L L G R
VR403
BAL
VR402
VR401

Spannungstabelle IC Midi 2290
Voltage table IC Midi 2290

PIN NO.	IC 1 LA1851	IC 2 PT2250	IC 3 LA4508	IC 4 PT2253	IC 201 BA3312N	IC 2021 BA3416		PIN NO.	IC 501 TC9304-027	PIN NO.	IC 501 TC9304-027
1	2.099	0	18.71	0.004	0.006	0.005		1	2.32	35	0.015
2	2.099	0.033	0.326	4.99	0.586	0.005		2	2.32	36	0
3	7.14	0	1.191	4.97	5.4	0.005		3	2.32	37	0
4	2.025	0	9.53	4.99	0.72	0.005		4	2.32	38	0
5	0.011	0	0.596	4.98	0.005	0.619		5	2.32	39	4.57
6	2.182	0	17.86	4.98	11.38	0.617		6	2.32	40	0
7	7.44	0	0	10.53	11.43	1.954		7	2.32	41	0
8	3.34	0	19.24	9.95	5.31	0.005		8	2.32	42	2.27
9	2.179	0	17.84	9.84	0.585	2.652		9	2.32	43	0
10	5.65	0	0.597	9.79	0.006	9.54		10	2.32	44	1.72
11	5.7	0	9.47	5		0.705		11	2.32	45	1.73
12	0.603	0	1.195	4.99		9.93		12	2.32	46	0
13	5.44	0	0.341	4.99		4.12		13	2.32	47	2.37
14	2.603	0	0	4.96		4.08		14	2.32	48	1.40
15	2.628	0		4.98		0		15	2.32	49	4.69
16	1.46	0		9.96		0.008		16	2.33	50	4.61
17	0.016	0				0.096		17	2.33	51	0
18	2.532	0				0.021		18	2.33	52	0
19	0.208	0.002						19	2.33	53	4.69
20	0.817	0.040						20	2.33	54	2.13
21	0.029	0						21	2.33	55	2.33
22	0.859	5.53						22	2.33	56	2.33
23	0.008	2.61						23	0.15	57	2.33
24	2.098	5.56						24	0	58	2.33
25	1							25	0	59	2.33
26	7.11							26	0	60	
27	2.291							27	0	61	
28	2.291							28	0.19	62	
29	2.291							29	0.19	63	
30	1.057							30	0.23	63	
								31	0.19	64	
								32	0.19	65	
								33	0.21	66	
								34	0.21	68	

Spannungstabelle Transistoren Midi 2290
Voltage tables transistors Midi 2290

TR	B	C	E
Q1	3.46	10.94	2.748
Q2	3.47	8.9	2.748
Q3	0.679	0.045	0.007
Q4	11.36	12.04	12.13
Q5	1.752	7.67	1.14
Q6	1.13	2.996	0.652
Q7	0.652	2.996	0.007
Q8	0.029	0.209	0.007
Q9	7.17	5.64	7.11
Q10	0.2	7.17	0.007
Q11	0.95	2.33	0.314
Q12	0.946	2.33	0.319
Q13	0.007	0.617	0
Q14	0.007	0.394	0
Q15	12.79	18.72	12.18
Q16	13.44	18.72	12.79
Q17	0.087	13.44	0.002
Q18	0.002	12.18	0.006
Q19	0.002	12.18	0.002
Q20	0.006	0.006	0.002
Q21	1.086	4.52	0.458
Q22	1.097	4.41	0.471
Q23	0	0.042	1.34
Q24	0	0.041	1.33
Q25	0	0.046	1.31
Q26	0	0.040	1.31
Q27	0	0.041	1.35
Q28	0	0.041	1.31
Q29	0.662	0.033	0
Q30	0	9.82	0
Q31	0	9.66	0
Q32	10.64	19.37	10
Q33	0.726	0.087	0
Q34	0.029	8.81	0

TR	B	C	E
Q201	1.271	0.6	0.6
Q202	1.195	5.19	0.558
Q203	0.691	0.031	0.005
Q204	1.195	5.00	0.56
Q205	0.002	0.19	0.19
Q206	0.543	0.6	0.007
Q207	0.547	0.6	0.007
Q208	0.686	0.009	0.005
Q301	0.05	5.13	0
Q401	0.6	10.23	0
Q402	0.035	12.01	0
Q403	0.61	9.6	0
Q404	0.034	12	0
Q405	0.667	4.54	0.028
Q406	0.682	2.69	0.037
Q501	0	3.133	0.133
Q502	0.261	5.39	0.008
Q503	0	0.075	0.217
Q504	0	0.067	0.217
Q505	0	0.063	0.217
Q506	4.46	1.475	0.070

TR	B	C	E

Abgleichanweisung Tuner Midi 2280

Alignment procedure tuner Midi 2280

CAUTION: Use isolation transformer or observe polarity when connecting test equipment. Connect low sides of generator and indicator to ground unless specified otherwise. Maintain line voltage at 230V AC. Allow 15-minute warm-up period. Use only enough generator output to obtain suitable indication.

INSTRUMENTS REQUIRED:

MW & FM Signal Generator
MW & FM Sweep Generator

AC VTVM
Oscilloscope

MW IF ALIGNMENT
GENERAL:

Set output of signal generator no higher than necessary to obtain an output reading.
Set Function Switch to MW.
Set Volume Control to maximum
Set Tone Control to high.
Set Balance Control to center.
Fashion loop of several turns of wire and radiate signal into loop of receiver.

SIGNAL GENERATOR	RADIO SETTING	INDICATOR	ADJUSTMENT	REMARKS
465kHz 1000Hz modulation	Tuning gang fully open.	VTVM across Left Speaker Jack	T4	Adjust for maximum. Repeat until no further improvement is noted.

AM-MW RF ALIGNMENT

SIGNAL GENERATOR	RADIO SETTING	INDICATOR	ADJUSTMENT	REMARKS
520kHz 1000Hz modulation	Tuning gang fully closed	VTVM across Left Speaker Jack	T2	Adjust for maximum. Repeat until no further improvement is noted.
1665kHz 1000Hz modulation	Tuning gang fully open.		TC4	Adjust for maximum.
600kHz	600kHz		MW COIL	Adjust for maximum.
1400kHz	1400kHz		TC3	Adjust for maximum.

FM IF ALIGNMENT
GENERAL:
Connect the high side of the Sweep Generator through 0.01mfd. to IF i/p test point short oscilloscope to ground with 0.01mfd.
Set Function switch of FM.
Set Volume control to minimum.
Set Balance control to center position.

SIGNAL GENERATOR	RADIO SETTING	INDICATOR	ADJUSTMENT	REMARKS
10.7MHz 450kHz sweep	Point of non-interference	Connect Scope to IC1 pin 16 & ground.	T3, T5	Adjust for maximum gain and symmetry to similar to Figure A.

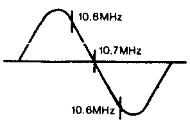


Fig. A

Abgleichanweisung Tuner Midi 2280
Alignment procedure tuner Midi 2280

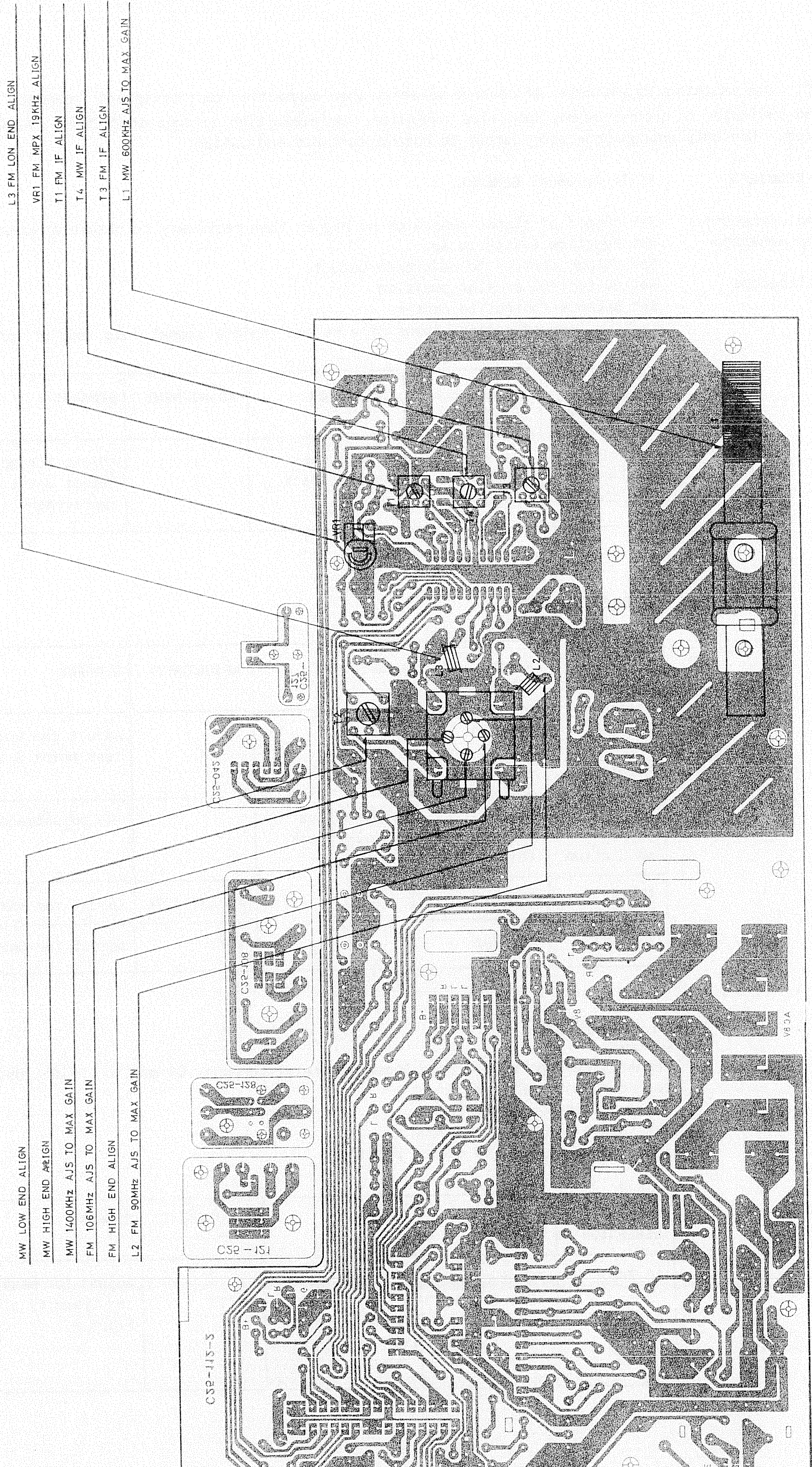
FM RF ALIGNMENT
GENERAL:
Connect Generator across antenna terminals.
Adjustment of coils should not be attempted unless the coil is deformed or replaced.
Set Function switch to FM.
Set Volume control to maximum.
Set Balance control to center.

SIGNAL GENERATOR	RADIO SETTING	INDICATOR	ADJUSTMENT	REMARKS
87.50MHz 1000Hz modulation	Tuning gang fully closed	VTVM across Right Speaker Jack	L3	Adjust for maximum gain
108.5MHz 1000Hz modulation	Tuning gang fully open		TC2	Adjust for maximum. Repeat this & prevoius step until tuning gang is exactly fully closed & open at 87.50MHz & 108.5MHz
90MHz 1000Hz modulation	90MHz		L2	Adjust for maximum.
106MHz 1000Hz modulation	106MHz		TC1	Adjust for maximum. Repeat this and previous step until no further improvement is noted.
98MHz 1000Hz modulation	98MHz		L101	Adjust for maximum

MPX ALIGNMENT
GENERAL:
Connect the Signal Generator across antenna terminals.
Set Function switch of FM.
Set Volume control to minimum.
Set Balance control to center.

SIGNAL GENERATOR	RADIO	INDICATOR SETTING	ADJUSTMENT	REMARKS
98MHz at 60dB.	98MHz	Connect 10K resistor between IC1 pin 18 and ground. To frequency counter.	VR1	Adjust VR1 to read 76KHz on Freq.Counter. Increase input Signal to 30uv.and Steaeo light will go ON. Increase input signal to 1mV and measured separation should exceed

Abgleichpunkte Tuner Midi 2280
Alignment location tuner Midi 2280


L3 FM LON END ALIGN
VR1 FM MPX 19KHz ALIGN
T1 FM IF ALIGN
T4 MW IF ALIGN
T 3 FM IF ALIGN
L1 MW 600KHz AJS TO MAX GAIN
MW LOW END ALIGN
MW HIGH END ALIGN
MW 1400KHz AJS TO MAX GAIN
FM 106MHz AJS TO MAX GAIN
FM HIGH END ALIGN
L2 FM 90MHz AJS TO MAX GAIN
VR1
L1
L2
L3
C52-045
C52-208
C52-138
C52-151
C52-115-S

Abgleichanweisung Tuner Midi 2290
Alignment procedure tuner Midi 2290

CAUTION: Use isolation transformer of observe polarity when connecting test equipment. Connect low sides of generator and indicator to ground unless specified otherwise. Maintain line voltage at 230V AC. Allow 15-minute warm-up period. Use only enough generator output to obtain suitable indication.

INSTRUMENTS REQUIRED:

AM & FM Signal Generator
AM & FM Sweep Generator

AC VTVM Oscilloscope

AM IF ALIGNEMT GENERAL:

Set output of signal generator no higher than necessary to obtain an output reading.
Set Function Switch to AM.
Set Volume Control to reference output.
Set EQ Control at flat position.
Set Balance Control to center.
Fashion loop of several turns of wire and radiate signal into loop of receiver.

SIGNAL GENERATOR	RADIO SETTING	INDICATOR	ADJUSTMENT	REMARKS
450KHz 400Hz Modulation	Scan to 1620KHz (high end)	VTVM across Speaker Jack.	T2	Adjust for maximum. Repeat until no further improvement is noted.

AM-MW RF ALIGNMENT

SIGNAL GENERATOR	RADIO SETTING	INDICATOR	ADJUSTMENT	REMARKS
522kHz 400Hz Modulation	Scan to 522KHz (low end)	VTVM across Speaker Jack.	T1	Adjust the voltage of test point A to 1.2V
1620kHz 400Hz modulation	Scan to 1620KHz (high end)			No adjustment.
603kHz	603kHz		AM ANT COIL	Adjust for maximum.
1404kHz	1404kHz		1TP1	Adjust for maximum.

FM IF ALIGNMENT
GENERAL:
Connect the high side of the Sweep Generator through .01 mfd.to CF105, oscilloscope to ground with .01 mfd.
Set Function switch of FM.
Set Volume control to minimum.
Set Balance control to center position.

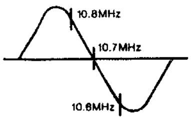


Fig. A

SIGNAL GENERATOR	RADIO SETTING	INDICATOR	ADJUSTMENT	REMARK
10.7MHz.	Point of non-interference	Connect Scope to + side of C29 and ground to - side of GND	T3	Adjust for maximum gain and symmetry similar to Figur A.

Abgleichanweisung Tuner Midi 2290
Alignment procedure tuner Midi 2290

FM RF ALIGNMENT
GENERAL:
Connect Generator across antenna terminals.
Adjustment of coils should not be attempted unless the coil is deformed or replaced.
Set Function switch to FM.
Set Volume control to reference output.
Set Balance control to center.

SIGNAL GENERATOR	RADIO SETTING	INDICATOR	ADJUSTMENT	REMARKS
87.5MHz 1000Hz modulation	Scan to 87.5MHz (low end)	VTVM across Speaker Jack	No adjustment	
108MHz 1000Hz modulation	Scan to 108MHz (high end)		L7 Inside tuner module	Adjust the voltage of test point B to 11.2V +/- 0.5V
98MHz 1000Hz modulation	98MHz		L2,3,4,5 Inside tuenr module	Adjust for maximum

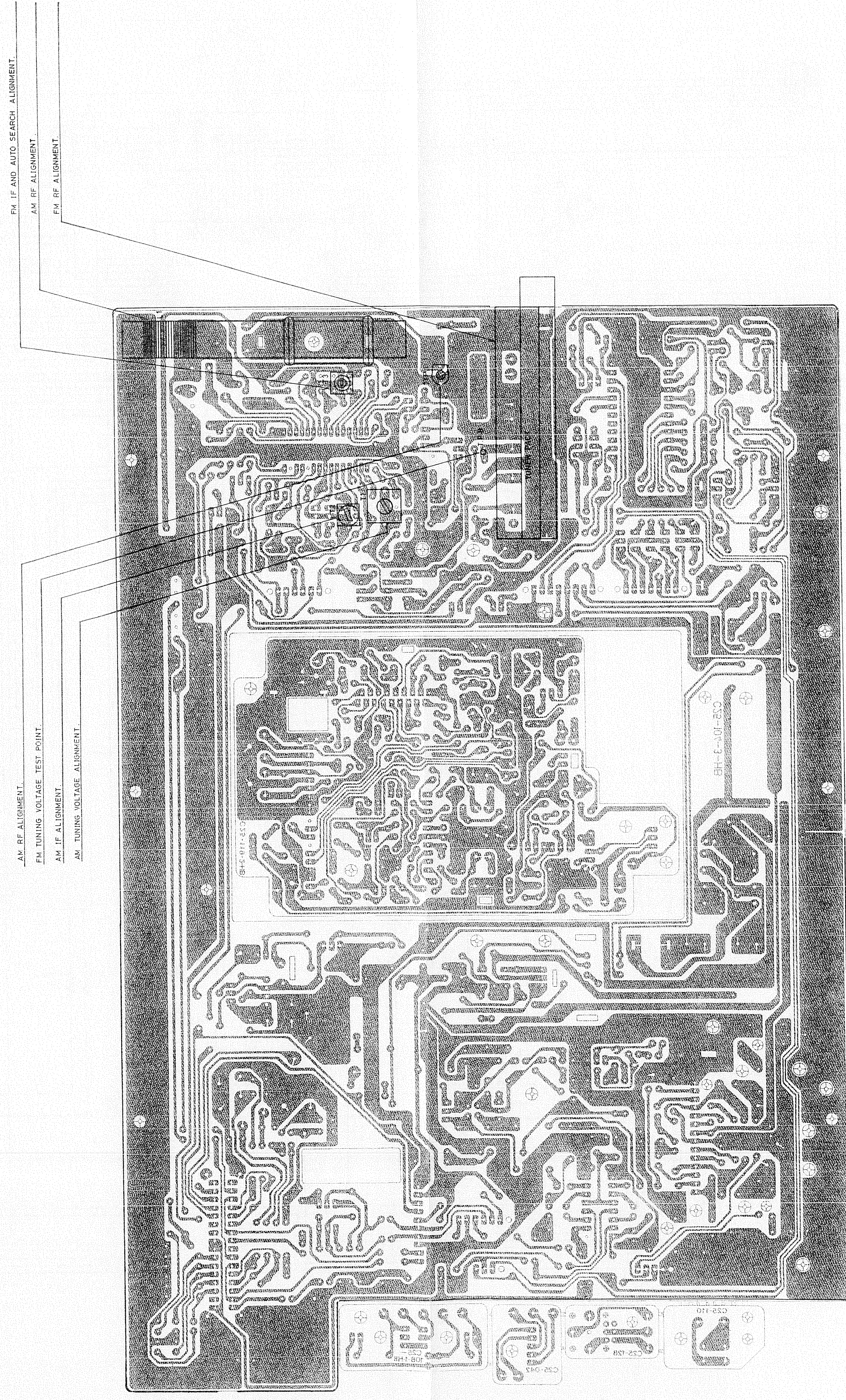
MPX ALIGNMENT
GENERAL:
Connect the Signal Generator across antenna terminals.
Set Function switch of FM.
Set Volume control to minimum.
Set Balance control to center.

SIGNAL GENERATOR	RADIO SETTING	INDICATOR	ADJUSTMENT	REMARKS
98 MHz at 0 db	98MHz	Connect Frequency Counter to IC102 pin no.13.	No adjustment	

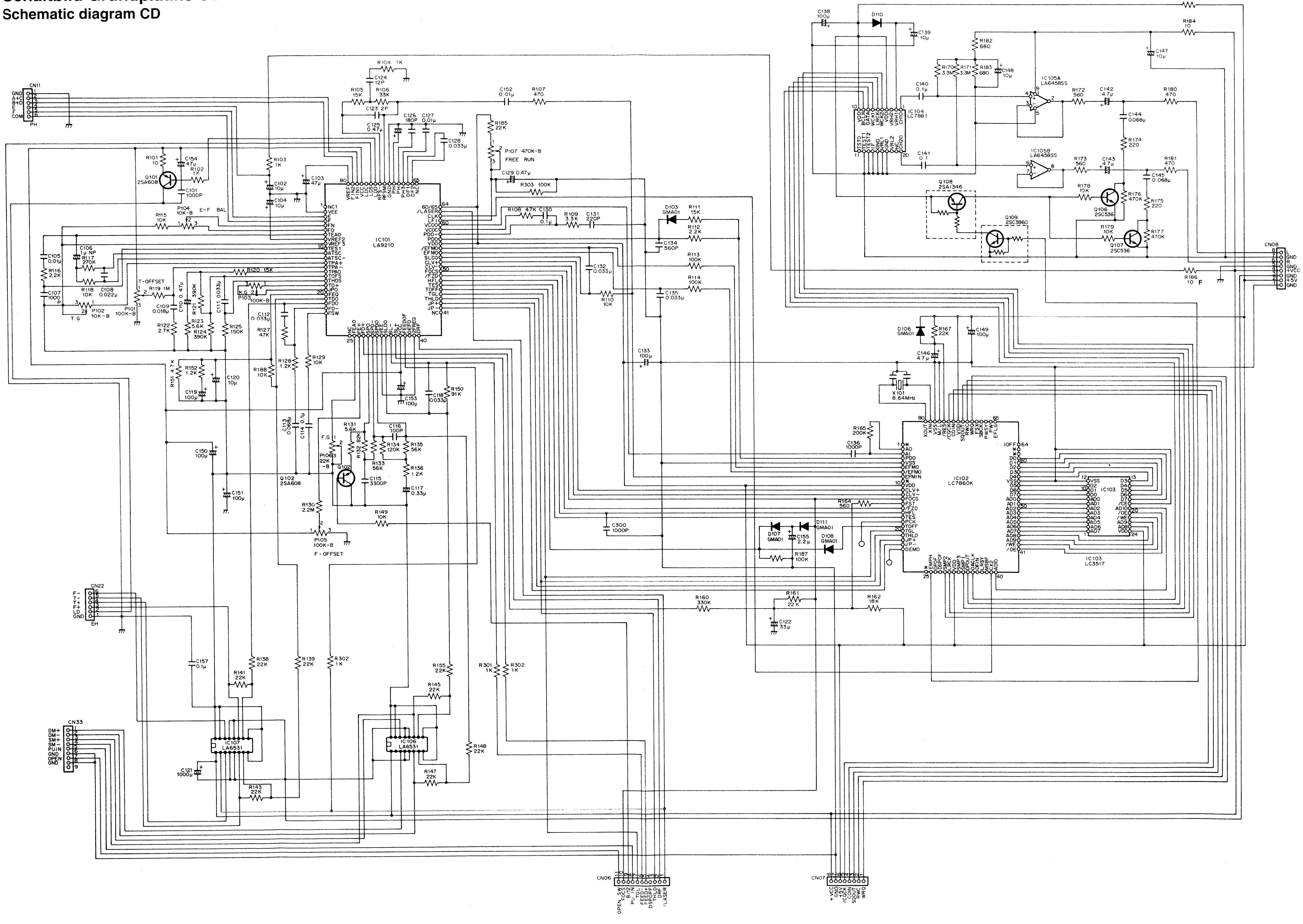
FM AUTO SEARCH ALIGNMENT PROCEDURE

NO.	SIGNAL GENERATOR SETTING	RECEIVER SETTING/ PROCEDURE	ADJUSTMENT PROCEDURE/ LOCATION
1	FM 97.9 MHz Output = 1mV 40kHz deviation/ 1kHz	Set receiver to FM 97.9MHz Adjust the speaker output to MIN. distortion	T3
2	Vary the FM frequency To 97.9MHz + 50kHz And 97.9MHz - 50kHz Output = 1mV 40kHz deviation /1kHz	Receiver setting at 97.9MHz Check whether the IC1 pin 21 output volt. is 0V when the signal generator output is at 97.9MHz/ 97.9MHz + 30kHz 97.9MHz - 30kHz	Adjustment is necessary if the DC volt. meter readings do not remain in zero position. Adjust T3 until DC volt. meter readings remain zero at these three FM frequencies input.

Abgleichpunkte Tuner Midi 2290
Alignment location Midi 2290

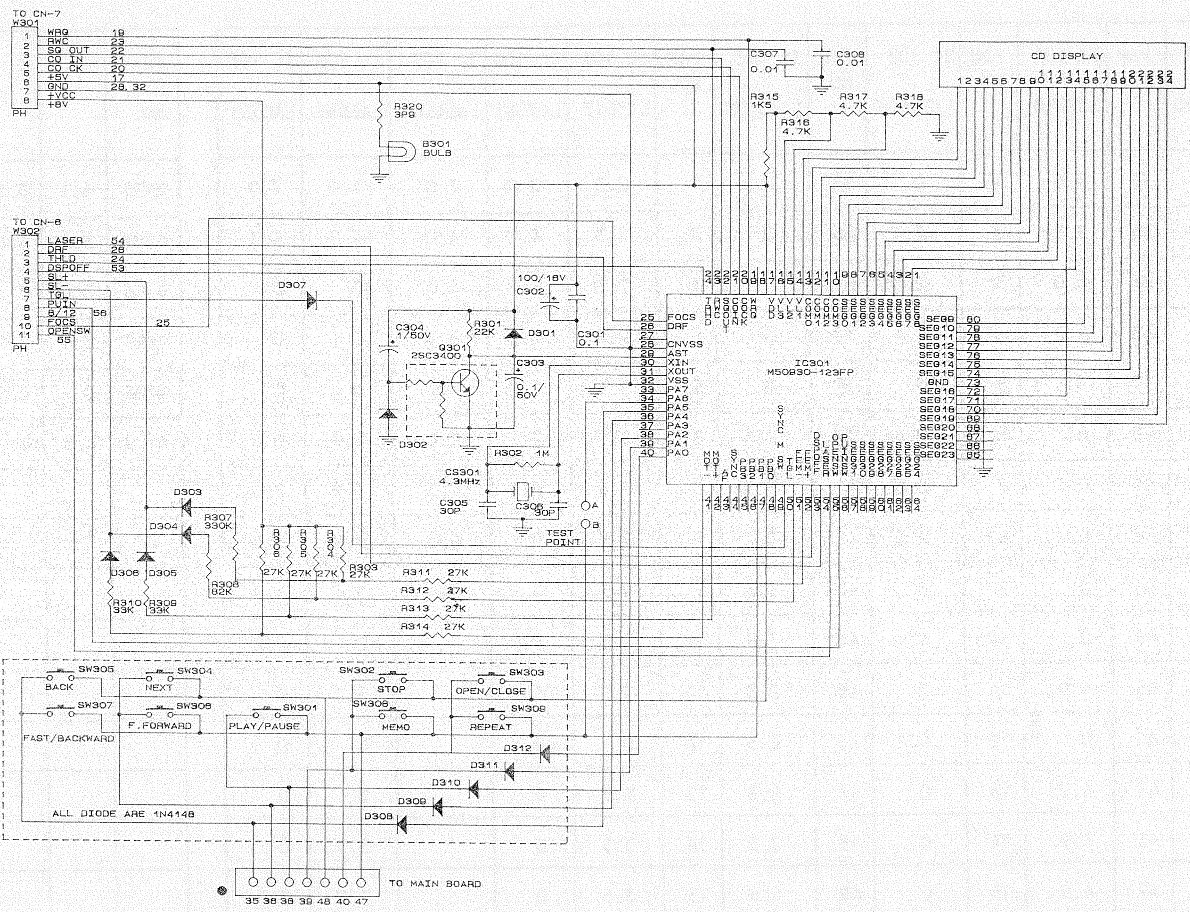

FM IF AND AUTO SEARCH ALIGNMENT.
AM RF ALIGNMENT.
FM RF ALIGNMENT.
AM RF ALIGNMENT.
FM TUNING VOLTAGE TEST POINT.
AM IF ALIGNMENT.
AM TUNING VOLTAGE ALIGNMENT.

Schaltbild Grundplatine CD
Schematic diagram CD



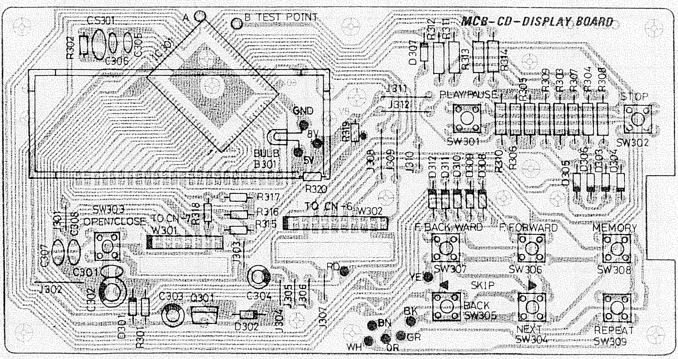
CN11
GND
A+C
B+D
E
F
COM
PH
R101 10
C154 47µ
R102 1K
Q101 2SA608
C101 1000P
P104 10K-B
E-F BAL
R115 10K
C105 0.01µ
C106 1µ NP
R117 270K
R116 2.2K
R118 10K
C108 0.022µ
C107 1000
T-OFFSET
R119 1M
P101 100K-B
P102 10K-B
T.G
C109 0.018µ
R122 2.7K
R123 5.6K
R124 390K
R121 390K
C110 0.47µ
C111 0.033µ
R125 150K
R120 15K
K.G
P103 100K-B
C112 0.033µ
R127 47K
R103 1K
C102 10µ
C104 10µ
C103 47µ
R104 1K
C124 12P
R105 15K
R106 33K
C123 2P
C125 0.47µ
C126 180P
C127 0.01µ
C128 0.033µ
C152 0.01µ
R107 470
R185 22K
P107 470K-B
FREE RUN
C129 0.47µ
R303 100K
IC101
LA9210
R108 4.7K
C130 0.1µ
R109 3.3K
C131 220P
C132 0.033µ
R110 10K
D103 GMA01
R111 15K
R112 2.2K
C134 560P
R113 100K
R114 100K
C135 0.033µ
C133 100µ
R128 1.2K
R129 10K
R188 10K
R151 4.7K
R152 1.2K
C120 10µ
C119 100µ
C113 0.068µ
C114 0.1µ
C153 100µ
C118 0.033µ
R150 91K
R131 5.6K
R132 82K
C116 100P
R134 120K
R135 56K
R133 56K
R136 1.2K
C115 3300P
C117 0.33µ
F.G
P106 22K-B
Q102 2SA608
R130 2.2M
R149 10K
P105 100K-B
F-OFFSET
C150 100µ
C151 100µ
C300 1000P
CN22
F-
T-
T+
F+
LD
GND
EH
C157 0.1µ
R138 22K
R141 22K
R139 22K
R302 1K
R155 22K
R145 22K
R301 1K
R302 1K
CN33
DM+
DM-
SM+
SM-
PUIN
GND
OPEN
GND
IC107 LA6531
IC106 LA6531
C121 1000µ
R143 22K
R147 22K
R148 22K
CN06
OPEN_SW
FOCS
B/12
PU_IN
TGL
FEED+
FEED-
DSP OFF
DRF
/LASER
CN07
+VCC
GND
/CCK
/CQIN
SQOUT
RWC
WRQ
C138 100µ
D110
C139 10µ
R168 100
R184 10
C147 10µ
R182 680
R170 3.3M
R171 3.3M
R183 680
C148 10µ
C140 0.1µ
IC104 LC7881
IC105A LA6458SS
R172 560
C142 4.7µ
R180 470
C144 0.068µ
R174 220
C141 0.1
IC105B LA6458SS
R173 560
C143 4.7µ
R181 470
C145 0.068µ
Q108 2SA1346
R178 10K
Q106 2SC536
R176 470K
R175 220
Q109 2SC3860
R179 10K
Q107 2SC536
R177 470K
CN08
GND
R
GND
+VCC
GND
+5V
GND
R186 10
F
D106 GMA01
R167 22K
C149 100µ
C146 4.7µ
X101 8.64MHz
R165 200K
C136 1000P
IC102 LC7860K
IC103 LC3517
R164 560
D107 GMA01
C155 2.2µ
D111 GMA01
D108 GMA01
R187 100K
R160 330K
R161 22K
R162 18K
C122 33µ

Schaltbild Displayplatine CD
Schematic diagram CD display board

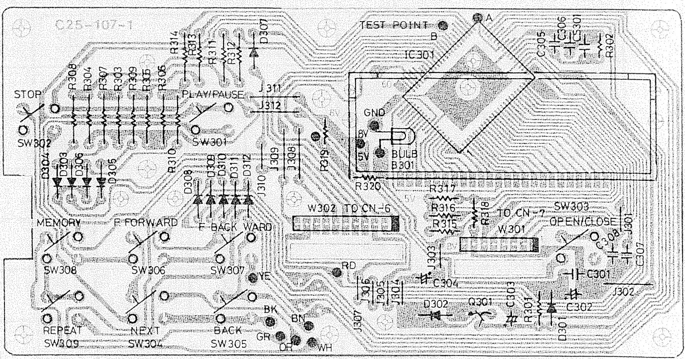

TO CN-7
W301
WRQ
SWC
SQ OUT
CQ IN
CQ CK
+5V
GND
+VCC
+8V
R320 3P9
B301 BULB
TO CN-6
W302
LASER
DRF
THLD
DSPOFF
SL+
SL-
TGL
PUIN
8/12
FOCS
OPENSW
C307 0.01
C308 0.01
R315 1K5
R317 4.7K
R318 4.7K
R316 4.7K
CD DISPLAY
100/16V C302
C304 1/50V
R301 22K
D301
C301 0.1
Q301 2SC3400
C303 0.1/50V
D302
D307
R302 1M
CS301 4.3MHz
C305 30P
C306 30P
TEST POINT
A
B
IC301 M50930-123FP
FOCS
DRF
CNVSS
AST
XIN
XOUT
VSS
PA7
PA6
PA5
PA4
PA3
PA2
PA1
PA0
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
GND
SEG16
SEG17
SEG18
SEG19
SEG20
SEG21
SEG22
SEG23
D303
D304
R307 330K
D306
D305
R310 33K
R309 33K
R308 82K
R306 27K
R305 27K
R304 27K
R303 27K
R311 27K
R312 27K
R313 27K
R314 27K
SW305 BACK
SW304 NEXT
SW307 FAST/BACKWARD
SW306 F.FORWARD
SW301 PLAY/PAUSE
SW302 STOP
SW303 OPEN/CLOSE
SW308 MEMO
SW309 REPEAT
D312
D311
D310
D309
D308
ALL DIODE ARE 1N4148
TO MAIN BOARD
35 36 38 39 46 40 47

Platinendarstellung Displayplatine CD
CD display P.C.B. diagram

Bestückungsseite
Top view


MCB-CD-DISPLAY BOARD
TEST POINT
CS301
IC301
B301 BULB
GND
SW301 PLAY/PAUSE
SW302 STOP
SW303 OPEN/CLOSE
TO CN-7 W301
TO CN-6 W302
F.BACKWARD
F.FORWARD
MEMORY
SW307
SW306
SW308
SKIP
BACK SW305
NEXT SW304
REPEAT SW309
YE
BK
BN
GR
WH
OR
RD

Leiterbahnseite
Bottom view


C25-107-1
TEST POINT
IC301
STOP SW302
PLAY/PAUSE SW301
GND
BULB B301
W302 TO CN-6
TO CN-7 W301
SW303 OPEN/CLOSE
MEMORY
F.FORWARD
F.BACK WARD
SW308
SW306
SW307
REPEAT SW309
NEXT SW304
BACK SW305
YE
BK
BN
GR
OR
WH
RD

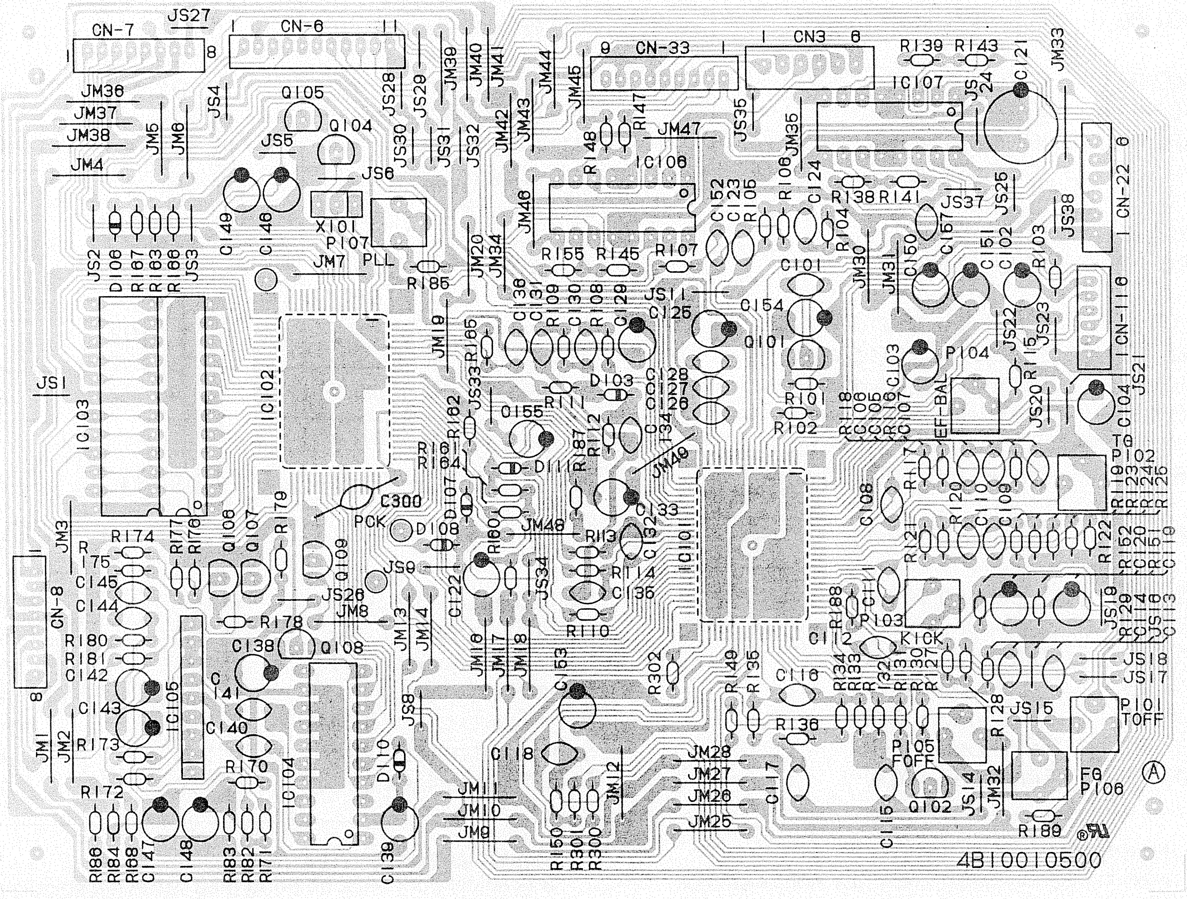
Spannungstabellen CD
Voltage tables CD

PIN NO.	IC101 LA9210	PIN NO.	IC 101 LA9210	PIN NO.	IC 102 LC7860K	PIN NO.	IC 102 LC7860K	PIN NO.	IC 103 LC3517	IC 104 LC7881	IC 105 LA6458S	IC 106 LA6531	IC 107 LA6531
1	0	35	3.6	1	0	35	2.5	1	2.3	2.0	7.8	7.9	7.9
2	0	36	7.3	2	2.4	36	0	2	2.3	4.0	4.0	4.0	4.3
3	3.5	37	4.0	3	2.4	37	0	3	2.3	4.0	4.0	0	0
4	3.5	38	3.5	4	2.4	38	0	4	2.3	4.6	2.4	0	0
5	3.5	39	3.5	5	0	39	0	5	1.5	1.0	-0.9	0	0
6	3.5	40	0	6	2.4	40	2.3	6	1.5	2.6	2.4	3.9	0
7	4.0	41	0.5	7	0.8	41	3.4	7	1.5	2.4	4.0	3.9	2.0
8	3.5	42	0	8	2.5	42	0	8	1.5	0	4.0	3.9	3.9
9	3.5	43	0	9	0	43	2.3	9	1.3	2.5	7.8	3.9	3.9
10	2.5	44	0	10	4.9	44	2.3	10	1.3	4.9		0	2.2
11	2.5	45	4.9	11	0	45	2.3	11	1.3	0		3.9	0
12	2.5	46	0	12	0.2	46	2.3	12	0	0		0	0
13	4.0	47	4.9	13	0	47	2.3	13	3.5	0		0	0
14	4.0	48	4.9	14	0	48	2.3	14	3.5	0		3.9	0
15	4.5	49	4.9	15	0	49	1.5	15	3.5	0		3.9	3.9
16	4.5	50	0	16	4.0	50	1.5	16	1.6	0		3.9	3.9
17	3.8	51	0	17	4.0	51	1.5	17	0	0			
18	3.8	52	0	18	2.2	52	1.5	18	0	0			
19	3.8	53	2.3	19	4.8	53	1.3	19	2.3	0			
20	3.8	54	1.7	20	4.8	54	1.3	20	3.4	2.0			
21	3.8	55	1.7	21	0	55	1.3	21	0				
22	3.8	56	5.0	22	0	56	0	22	2.3				
23	3.8	57	2.5	23	0	57	3.5	23	2.3				
24	3.8	58	2.5	24	0	58	3.5	24	4.9				
25	3.0	59	2.5	25	0	59	3.5						
26	3.7	60	3.8	26	4.9	60	1.6						
27	2.5	61	2.5	27	0	61	0						
28	3.0	62	2.2	28	0	62	0						
29	3.0	63	4.5	29	1.0	63	0						
30	3.0	64	5.0	30	2.4	64	0						
31	3.0			31	4.9								
32	0			32	0								
33	3.0			33	0								
34	3.6			34	0								

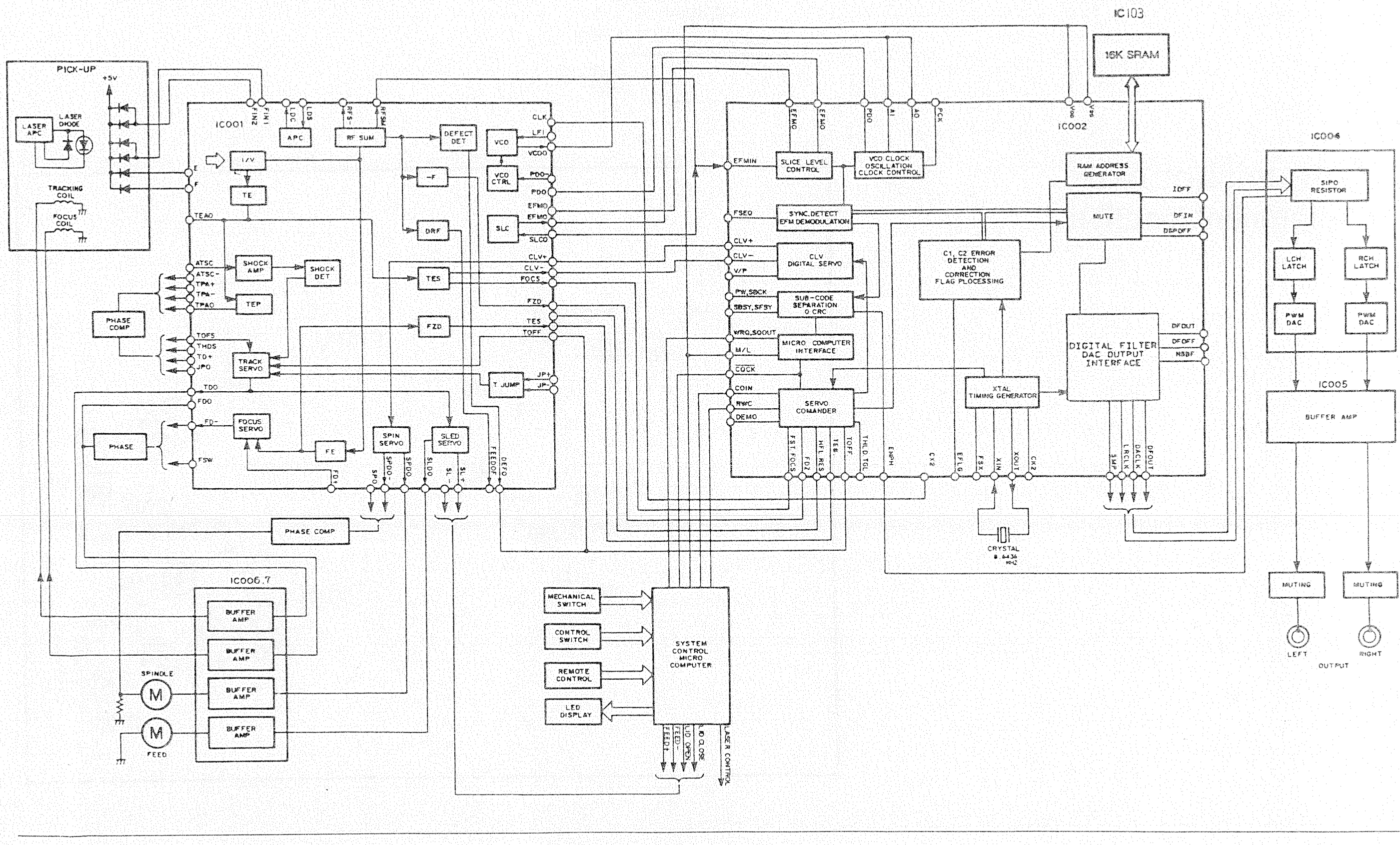
TR NO.	B	C	E
Q101	6.2	3.8	6.9
Q102	3.2	3.6	3.6
Q106	0.6	0	0
Q107	0.6	0	0
Q108	0	4.6	4.6
Q109	4.8	0	0

Platinendarstellung Grundplatine CD
CD main P.C.B. diagram

Bestückungsseite
Top view


CN-7
JS27
CN-6
CN3
CN-33
CN-22
CN-116
CN-8
IC101
IC102
IC103
IC104
IC105
IC106
IC107
Q101
Q102
Q104
Q105
Q107
Q108
Q109
X101
P101
TOFF
P102
TG
P103
KICK
P104
EF-BAL
P105
FOFF
P106
FG
P107
PLL
PCK
C300
4B10010500

Blockschaltbild CD
Functional block diagram CD

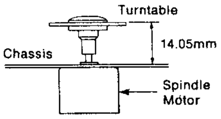

IC103
16K SRAM
PICK-UP
LASER APC
LASER DIODE
TRACKING COIL
FOCUS COIL
IC001
I/V
TE
APC
RF SUM
DEFECT DET
VCO
VCO CTRL
DRF
SLC
SHOCK AMP
SHOCK DET
TEP
TES
FZD
PHASE COMP
TRACK SERVO
T JUMP
PHASE
FOCUS SERVO
FE
SPIN SERVO
SLED SERVO
IC002
SLICE LEVEL CONTROL
VCO CLOCK OSCILLATION CLOCK CONTROL
SYNC.DETECT EFM DEMODULATION
CLV DIGITAL SERVO
SUB-CODE SEPARATION Q CRC
MICRO COMPUTER INTERFACE
SERVO COMANDER
C1, C2 ERROR DETECTION AND CORRECTION FLAG PLOCESSING
XTAL TIMING GENERATOR
RAM ADDRESS GENERATOR
MUTE
DIGITAL FILTER DAC OUTPUT INTERFACE
CRYSTAL
IC004
SIPO RESISTOR
LCH LATCH
RCH LATCH
PWM DAC
IC005
BUFFER AMP
MUTING
LEFT
RIGHT
OUTPUT
IC006,7
BUFFER AMP
SPINDLE
FEED
MECHANICAL SWITCH
CONTROL SWITCH
REMOTE CONTROL
LED DISPLAY
SYSTEM CONTROL MICRO COMPUTER
LASER CONTROL

Ersatzteilliste CD elektrisch
Spare parts list CD electrical

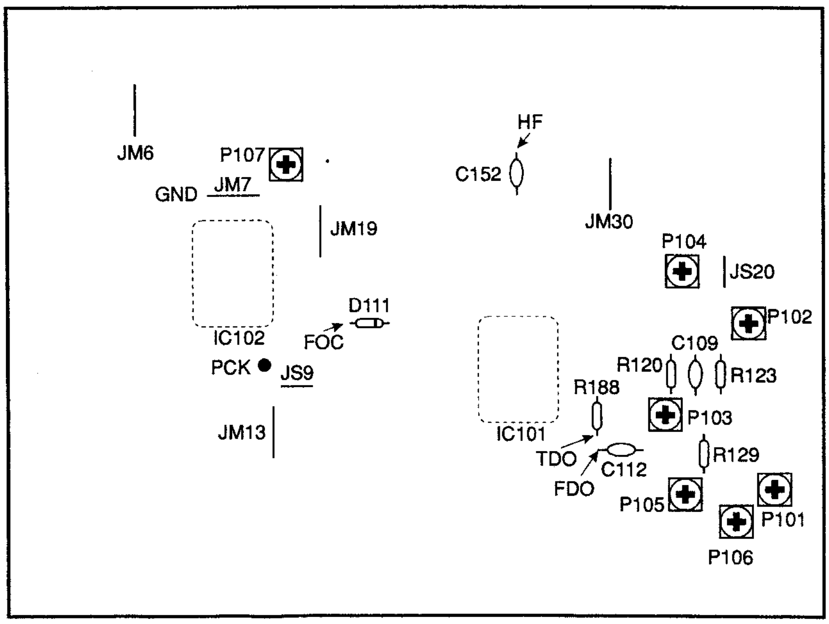
Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisguppe Price-key
57 001 00	Grundplatine CD	CD decoder board		F 1
57 002 00	IC LA 9210 M	IC LA 9210 M	IC 101	C 2
48 408 00	IC LC 7860 K	IC LC 7860 K	IC 102	D 9
65 361 00	IC LC 3517 BS	IC LC 3517 BS	IC 103	C 5
60 970 00	IC LC 7881	IC LC 7881	IC 104	B 9
24 151 00	IC LA 6458 S	IC LA 6458 S	IC 105	A 9
57 003 00	IC LA 6531	IC LA 6531	IC 106	B 5
57 003 00	IC LA 6531	IC LA 6531	IC 107	B 5
08 012 00	Transistor 2 SC 1317	Transistor 2 SC 1317	Q 101, 102	A 7
57 004 00	Transistor 2 SC 3330 R	Transistor 2 SC 3330 R	Q 106, 107	A 1
40 367 00	Transistor 2 SA 1346	Transistor 2 SA 1346	Q 108	A 2
57 005 00	Transistor 2 SC 3860	Transistor 2 SC 3860	Q 109	A 1
60 366 00	Diode GMA 01-AT 1-M	Diode GMA 01-AT 1-M	D 103-111	A 2
60 980 00	Keramik Schwingkreis CST 8,64 MG	CST 8.64 MG	X 101	A 6
66 313 00	Trimmpoti 100 K	Semi-fixed resistor 100 K	P 101	A 3
37 442 00	Trimmpoti 10 K	Semi-fixed resistor 10 K	P 102	A 2
66 313 00	Trimmpoti 100 K	Semi-fixed resistor 100 K	P 103	A 3
37 442 00	Trimmpoti 10 K	Semi-fixed resistor 10 K	P 104	A 2
66 313 00	Trimmpoti 100 K	Semi-fixed resistor 100 K	P 105	A 3
32 587 00	Trimmpoti 22 K	Semi-fixed resistor 22 K	P 106	A 4
57 006 00	Trimmpoti 470 K	Semi-fixed resistor 470 K	P 107	A 2

Antriebstellerhöhe
Diese Einstellung ist notwendig, wenn der Antriebsmotor gewechselt wird.
Der Antriebsteller muß so befestigt werden, daß der Abstand zwischen Oberkante Teller und Chassis 14,05 mm ±0,1 mm beträgt.

Adjustment of turntable height
This adjustment must be performed when the spindle motor is replaced.
The turntable should be mounted so that its upper surface is 14.05 mm ±0.1 mm above the surface of the chassis.



Abgleichpunkte
Alignment location



Abgleichanweisung CD Spieler

Benötigte Meßgeräte:
- Frequenzzähler
- Test CD Philips 5A oder Sony YEDS 18
- Oszilloskop
- DC Voltmeter

Frequenzabgleich
(Dieser Abgleich kann ohne CD-Platte durchgeführt werden.)
1. CD-Schlitten öffnen.
2. Frequenzzähler an TP PCK und Masse (JM7)anschließen.
3. Mit P107 auf 4,300 MHz ±20 kHz abgleichen.

Kontrolle Fokusabweichung
1. CD-Schlitten öffnen.
2. DC Voltmeter zwischen TP FDO (C112) und Masse (JM6) anschließen.
3. Kurzschlußbrücke zwischen Masse (JM7) und JM6 und zwischen Masse (JM7) und D111 anodenseitig (TP FOC).
4. Mit P105 auf 0 V ±10 mV abgleichen.
5. Kurzschlußbrücken entfernen.

Kontrolle Spurabweichung
1. CD-Schlitten öffnen.
2. DC Voltmeter zwischen TP TDO und Masse JM30 anschließen.
3. Masse (JM7) mit JS9 verbinden.
4. Mit P101 auf 100 mV ±10 mV abgleichen.
5. Kurzschlußbrücke entfernen.

EF-Balance-Abgleich
1. CD-Platte einlegen und Play-Taste drücken.
2. Oszilloskop an TP HF (C152) und Masse (JM7) anschließen.
3. HF-Signal mit P104 auf Maximum abgleichen **(ca 2,7 Vss mit Test CD Philips 5A und 2,5 Vss mit Test CD Sony YEDS 18).**

Fokus-Servo-Abgleich
(Einstellung von Fokus und Spurführungsverstärkung P102, P103, P106).
Für genauen Abgleich ist ein Servo-Analysator erforderlich. Jedoch besteht bei Normalbetrieb auch dann keine Schwierigkeit, wenn eine geringe Abweichung von den zulässigen Werten auftritt, da die Verstärkung in einem gewissen Bereich variieren kann. Deswegen sollte dieser Abgleich nicht ausgeführt werden. Mit der Fokus- und Servoverstärkung werden Nachführeigenschaften des Abtasters bei mechanischen Erschütterungen und Stößen während des Betriebs beeinflußt.

Alignment procedure CD player

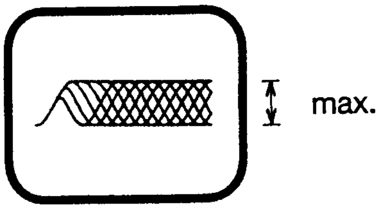
Instruments required:
- Frequency counter
- Test disk Philips 5A or test disk Sony YEDS 18
- Oscilloscope
- DC voltmeter

VCO frequency adjustment
(This adjustment does not need a compact disk.)
1. Open CD tray.
2. Connect frequency counter to TP PCK and ground (JM7).
3. Adjust P107 so that the value of the frequency counter comes within 4.300 MHz ±20 kHz.

Focus offset control
1. Open CD tray.
2. Connect a DC voltmeter between TP FDO (C112) and ground (JM6).
3. Connect ground (JM7) to JM6 and ground (JM7) to anode of D111 (TP FOC).
4. Adjust with P105 to 0 V ±10 mV.
5. Disconnect short circuits.

Tracking offset control
1. Open CD tray.
2. Connect a DC voltmeter between TP TDO and ground JM 30.
3. Connect ground (JM7) to JS9.
4. Adjust with P101 to 100 mV ±10 mV.
5. Disconnect short circuit.

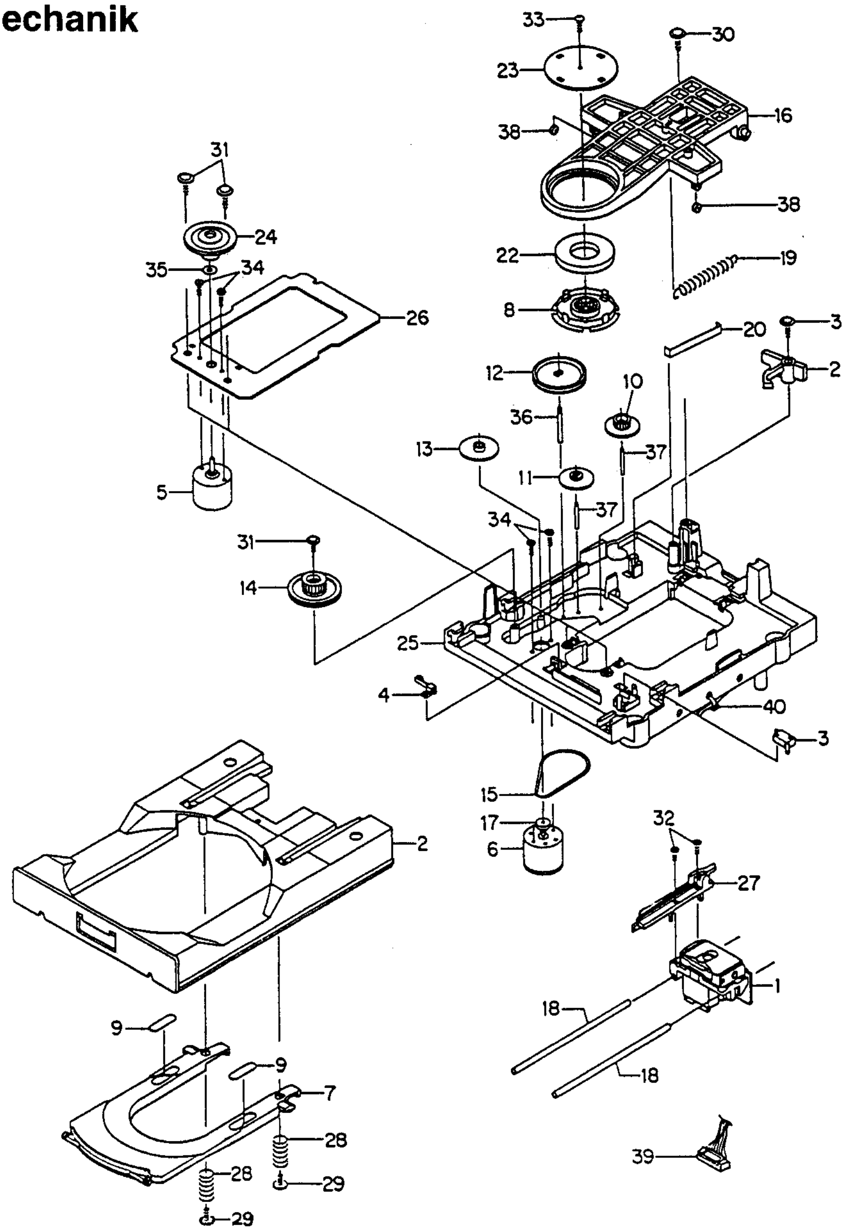
EF-Balance adjustment
1. Load a disk and play back.
2. Connect an oscilloscope to TP HF (C152) and ground.
3. Adjust P104 so that the RF-Signal becomes maximum **(about 2.7 Vpp with test disk Philips 5A and 2.5 Vpp with test disk Sony YEDS 18).**



Focus servo gain adjustment
(Focus/Tracking-gain adjustment P102, P103, P104).
A servo-analyzer is required for accurate adjustment. However, there will be no problem in normal operation even in case of a minor drift from precise adjustment because the gain has an allowable margin.
Therefore, do not apply this adjustment.
The Focus/Tracking-gain determines the tracking property of the pick-up against the mechanical noise and mechanical shock during the operation.

Explosionsdarstellung CD Mechanik
Exploded CD mechanism

CD . . .



Ersatzteilliste CD Mechanik
Spare parts list CD mechanism

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisguppe Price-key
70 056 00	CD-Mechanik kpl. CD 91 F 7	CD mechanism assembly	77	F 5
60 335 00	Laserabtaster	Assembly pick up laser	CD 1	F 1
66 142 00	Schlitten kpl.	Table loading assembly	2 + 7 + 9 + 28 + 29	D 1
60 336 00	Schalter (Hebel)	Lever switch 1 P 1 T	CD 3	A 8
66 143 00	Mikroschalter	Leaf switch	CD 4	A 4
60 339 00	Motor Disk	Motor	CD 5	C 6
66 144 00	Motor Laser + Schlitten	Motor	CD 6	C 3
66 145 00	Niederhalter kpl.	Flap disc cramp assembly	8 + 16 + 22 + 23 + 33 + 38	D 2
66 146 00	Zahnrad Laser	Gear pinion pick	CD 10	A 4
66 147 00	Zahnrad laden Laser	Gear load pick	CD 11	A 4
66 148 00	Zahnrad Pulley	Gear pulley	CD 12	A 4
66 149 00	Zahnrad laden Schlitten	Gear load table	CD 13	A 6
66 150 00	Zahnrad Schlitten	Gear pinion table	CD 14	A 6
66 151 00	Antriebsriemen	Belt square	CD 15	A 6
66 152 00	Pulley-Motor	Pulley motor	CD 17	A 4
66 153 00	Gleitstange Laser	Shaft slide pick	CD 18	A 8
66 154 00	Feder Rasthebel Laser	Spring tension flap	CD 19	A 5
66 156 00	Schalterhebel	Arm change	CD 21	A 4
60 340 00	Antriebsteller	Turntable assembly	CD 24	B 3
66 158 00	Zahnstange Laser	Gear rack	CD 27	A 6

Ersatzteilliste Cassettenmechanik
Spare parts list cassette mechanism

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisguppe Price-key
57 172 00	Cassettenmechanik kpl.	Cassette mechanism	33	A 0
44 128 00	Feder Pauserasthebel	P control spring	CM 10	A 3
46 417 00	Pauserasthebel	Pause lever (E)	CM 11	A 5
44 130 00	Druckfeder Pauserasthebel	Pause lever spring	CM 12	A 3
44 131 00	Sicherungsstöpsel Pause	Pause stopper	CM 13	A 2
32 428 00	Feder Tastenhebel (Vor-, Rücklauf)	Button lever spring (A)	CM 14	A 3
46 864 00	Feder Aufnahmetaste	Record button lever spring	CM 31	A 3
32 423 00	Feder Tastenhebel (Stop, Pause)	Button lever spring (B)	CM 32	A 3
44 132 00	Mikroschalter MSW-1541 T	Leaf switch MSW-1541 T	CM 33	B 1
13 882 00	Mikroschalter MSW-1412 T NBK	Leaf switch MSW-1412 TNBK	CM 34	B 1
45 760 00	Feder Kopfträgerplatte	Panel P spring	CM 39	A 4
48 203 00	Feder Bandandruckrolle	M control spring	CM 40	A 4
32 435 00	Feder A/W-Kopf	Azimuth spring	CM 43	A 3
57 168 00	Bandandruckrolle kpl.	Pinch roller arm assembly	CM 44	B 1
57 169 00	Feder Bandandruckrolle	Pinch roller spring	CM 45	A 4
44 135 00	Tasthebel Endabschaltung	Sensing lever	CM 46	A 6
44 137 00	Rutschkupplung kpl. A	RF clutch assembly	CM 47	B 1
44 137 00	Rutschkupplung kpl. B	RF clutch assembly	DM 48	B 1
44 138 00	Riemen Rutschkupplung A	RF belt	CM 49	B 3
44 138 00	Riemen Rutschkupplung B	RF belt	CM 50	B 3
57 170 00	Schwungmasse kpl. A	Flywheel assembly	CM 51	B 8
57 171 00	Schwungmasse kpl. B	Flywheel assembly	CM 52	B 8
66 085 00	Feder	Gear plate spring	CM 53	A 3
44 136 00	Kurvenzahnrad	Cam gear	CM 55	B 2
44 140 00	Zahnrad Vorlauf	FF gear	CM 56	A 7
44 319 00	Feder Wickelteller links	Back tension spring	CM 57	A 3
44 141 00	Wickelteller links	Supply reel assembly	CM 58	B 0
44 142 00	Wickelteller rechts	Take-up reel assembly	CM 59	B 1
46 436 00	Spange Wickelteller	Sensor	CM 60	A 3
32 453 00	Gummipuffer Motor	Motor rubber	CM 62	A 2
32 454 00	Schraube Motor	Moto collar screw	CM 63	A 2
44 778 00	Pulley Motor	Motor pulley	CM 64	A 6
40 818 00	Antriebsriemen	Main belt	CM 65	A 3
46 418 00	Gleithebel Eject	Eject slide lever	CM 67	A 8
32 459 00	Cassettenandruckfeder	Pack spring	CM 68	A 5
57 285 00	Wiedergabekopf	P head	CM 69	C 0
66 710 00	A/W-Kopf	RP head	CM 70	C 3
65 941 00	Löschkopf	E head	CM 71	B 1
66 712 00	Motor	Motor	CM 72	C 7
32 451 00	Aufnahmesperrhebel	Record safety lever	CM 73	A 5
32 462 00	Sicherungsscheibe Schwungmasse	P washer	CM 88	A 0
29 472 00	Scheibe 2,1 × 5 × 0,5	P washer	CM 89	A 0
65 321 00	Tastenrahmen mit Achse	Operation lever	CM 91	A 7
65 320 00	Tastenhebel	Button frame (S)	CM 92	A 2
46 867 00	Kick-Hebel Doppelpause	P kick lever (B)	CM 95	A 1
46 868 00	Feder Kick-Hebel	P kick lever spring	CM 99	A 0
32 440 00	Schraube Rutschkupplung	RF arm collar screw	CM 105	A 2

Explosionsdarstellung Cassettenmechanik
Exploded view cassette mechanism

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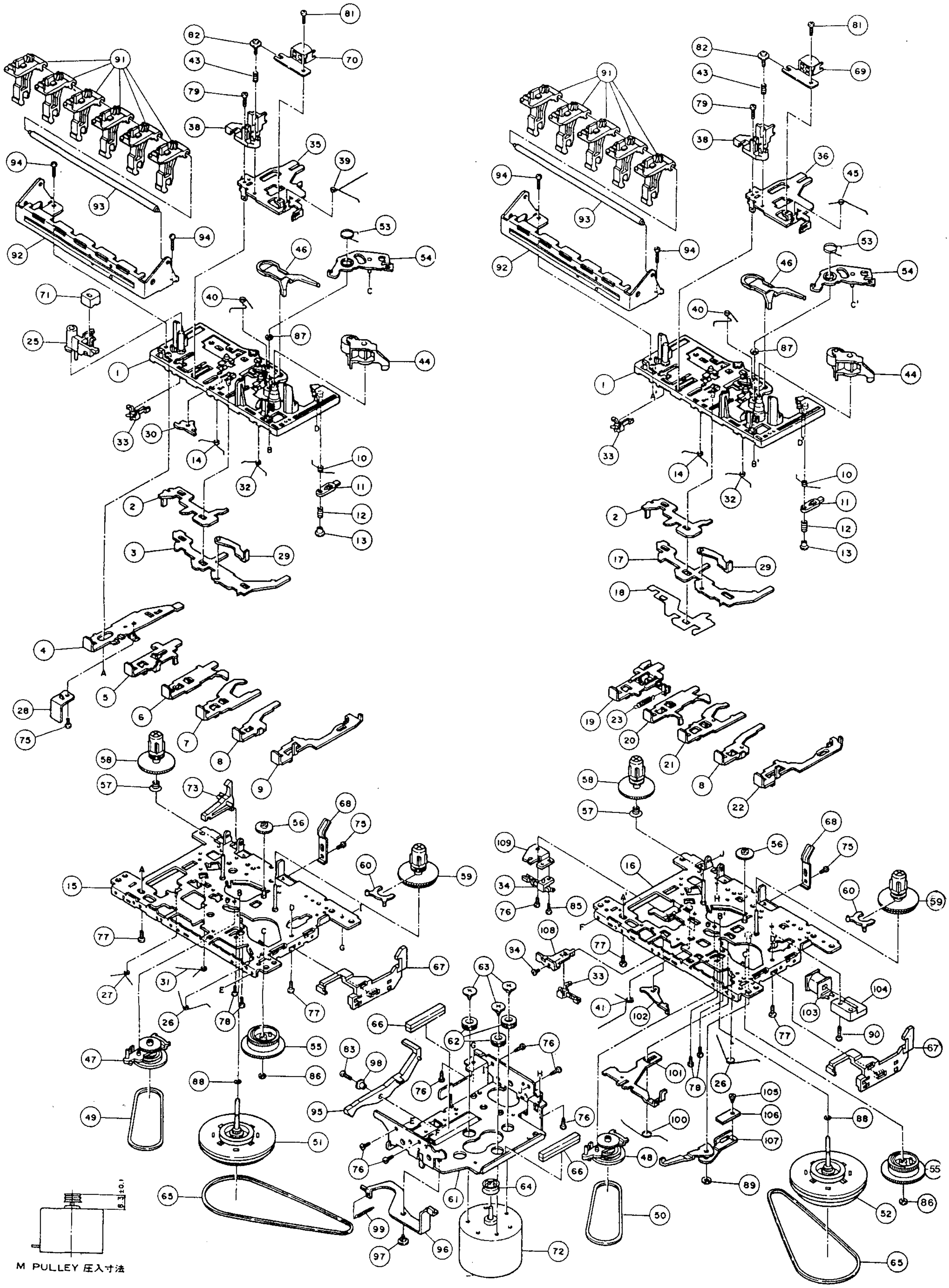
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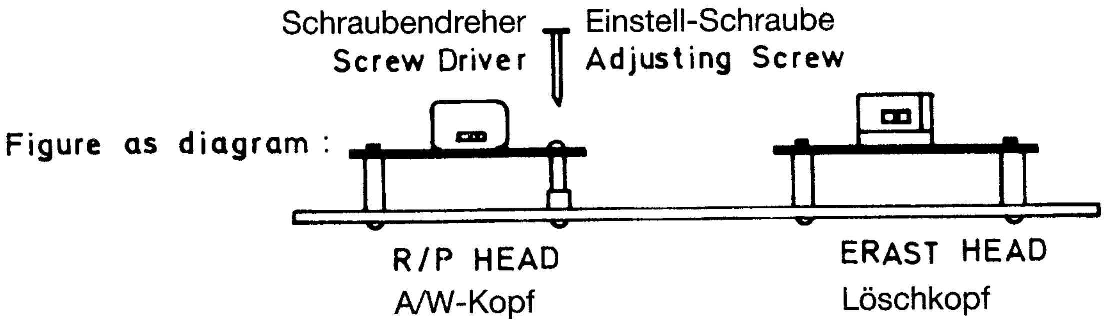
Abgleich Azimuth
Alignment procedure head azimuth


Schraubendreher
Screw Driver
Einstell-Schraube
Adjusting Screw
Figure as diagram :
R/P HEAD
A/W-Kopf
ERAST HEAD
Löschkopf

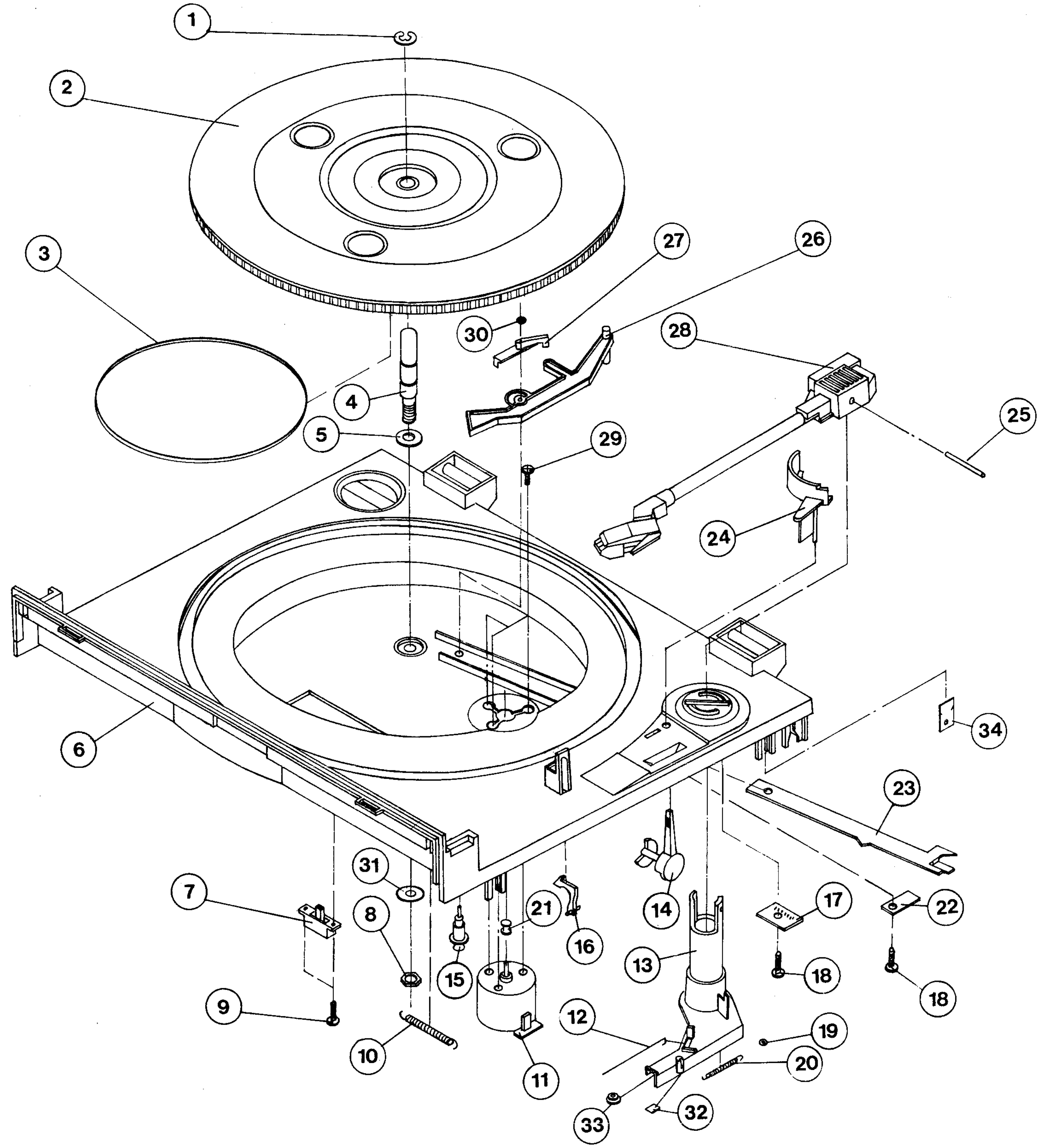
HEAD AZIMUTH:	While playing test tape (10 kHz). Adjust azimuth screw on the left side of the tape head for maximum output for both L/R channel. Testcassette (10 kHz) abspielen. Mit der Azimuth-Schraube links des Kopfes maximales Ausgangssignal für beide Kanäle (L/R) einstellen.
INSTRUMENTS:	AC-VOLTMETER FREQUENCY COUNTER
MESSGERÄTE:	AC-VOLTMETER FREQUENZZÄHLER

Ersatzteilliste Plattenspieler
Spare parts list player

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
57 189 00	Plattenspieler kpl.	Turntable assembly		E 9
57 173 00	Sicherungsring Plattenteller	E Ring M 6 × 0,8 × 12	PL 1	A 0
57 174 00	Plattenteller	Platter	PL 2	B 8
57 175 00	Antriebsriemen	Turntable belt	PL 3	A 6
57 176 00	Achse Plattenteller	Platter shaft	PL 4	A 8
57 177 00	Gehäuseoberteil	Turntable base	PL 6	C 2
57 178 00	Schalter 33/45	Lup fung slide switch	PL 7	A 1
57 179 00	Feder Endschaltstange	Return plate pull spring	PL 10	A 1
65 504 00	Motor MMI-6T2 RWO	Turntable motor MMI-6T2 RWO	PL 11	C 7
57 180 00	Tonarmlager	Swing lever	PL 13	A 3
57 181 00	Lift Tonarm	Pick-up lever	PL 14	A 4
57 182 00	Clip, Tonarmstütze	Lift tone arm holder	PL 16	A 1
57 183 00	Feder Tonarmlager	Wire pull spring	PL 20	A 3
57 184 00	Pulley Motor	Motor pulley	PL 21	A 2
57 185 00	Endschaltstange	Return plate	PL 23	A 7
57 186 00	Endschalthebel	Return lever	PL 26	A 8
57 187 00	Zahnstange Endschalthebel	Cam lever	PL 27	A 4
57 188 00	Tonarm kpl.	Shi lian tone arm assembly	PL 28	C 1
57 286 00	System mit Nadel	Cartridge with system		B 7

Explosionsdarstellung Plattenspieler
Exploded view record player

PL...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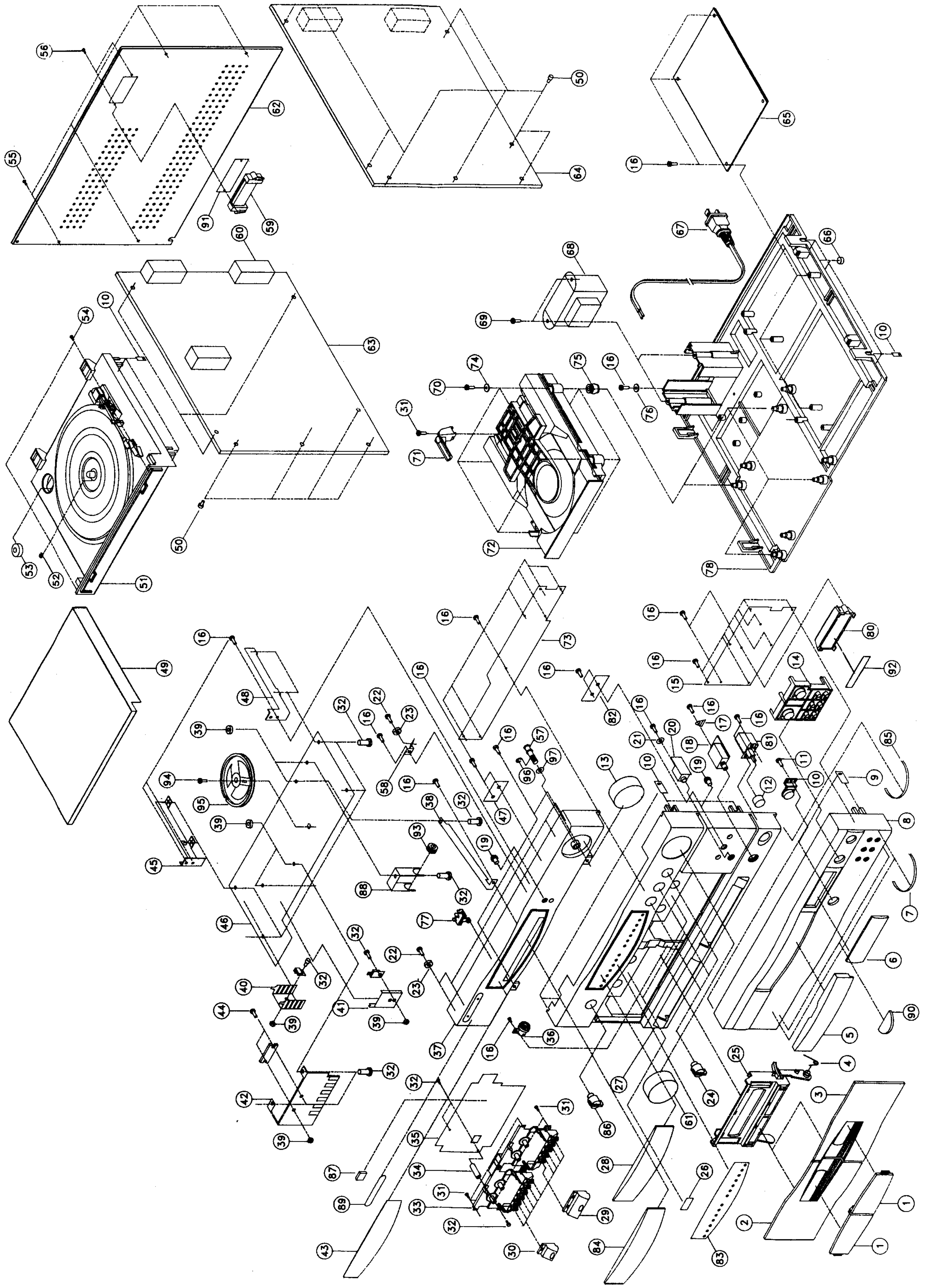
Explosionsdarstellung Gehäuse Midi 2280
Exploded view housing Midi 2280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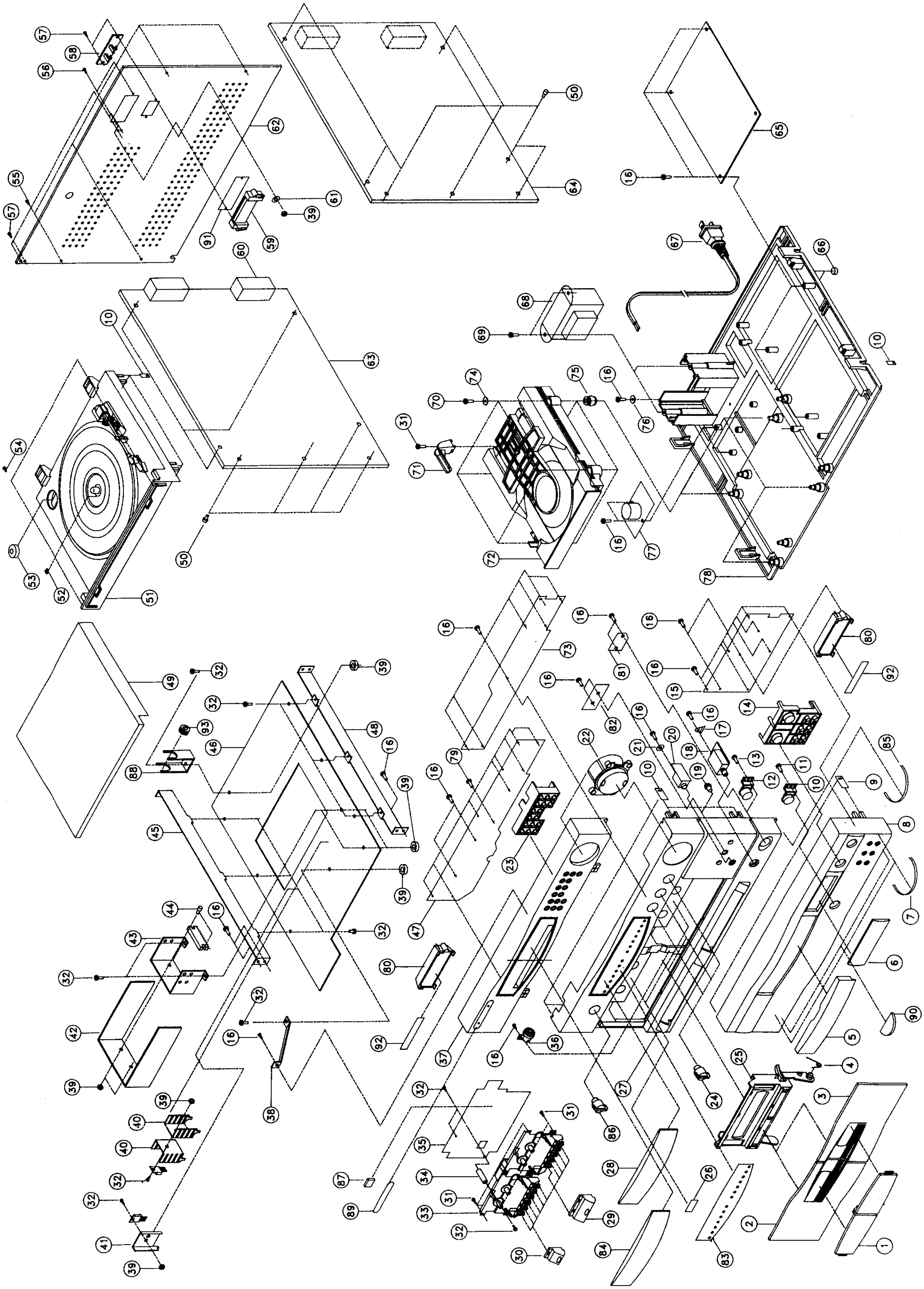
Ersatzteilliste Gehäuse Midi 2290
Spare parts list housing Midi 2290

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisguppe Price-key
57 109 00	Frontblende Tuner Digital	Digital tuner escutcheon	37	B 5
57 110 00	Frontblende Cassette	Main escutcheon digital	27	B 9
57 111 00	Frontblende CD	CD escutcheon	8	B 5
57 112 00	Emblem Schneider	Escutcheon name plate Schneider	89	A 8
57 113 00	Emblem Dual	Name plate Dual	89	A 3
57 114 00	Seitenteil rechts	Main cabinet right	64	A 7
57 115 00	Seitenteil links	Main cabinet left	63	A 7
57 177 00	Gehäuseoberteil	Turntable base	51	C 2
57 116 00	Gehäuseboden	Cabinet base	78	C 2
57 117 00	Gummi Fuß vorne	Rubber sheet foot	90	A 2
57 118 00	Gummi Fuß hinten	Rubber foot	66	A 2
57 119 00	Abdeckhaube Midi 2280/2290	Dust cover	49	C 5
57 120 00	Abdeckblende Tuner	Digital lens	84	A 4
57 121 00	Abdeckblende Power Meter	Main lens	28	A 4
57 122 00	Abdeckblende CD Display	CD display lens	6	A 4
57 123 00	Abdeckung CD Schlitten	CD door	5	A 4
57 124 00	Blende Cassettenfach	Door lens	1	A 5
57 125 00	Deckel Cassettenfach A (links)	Cass. door cover left	2	A 8
57 126 00	Deckel Cassettenfach B (rechts)	Cass. door cover right	3	A 8
57 127 00	Cassettenfach	Door stand	25	B 3
60 266 00	Feder Cassettenfach	Door spring	4	A 3
57 128 00	Klaviertaste schmal (10)	Cass. key knob small	30	A 3
57 129 00	Klaviertaste breit (1)	Cass. key knob large	29	A 4
57 130 00	Dämpfung Cassettenfach	Gear damper + gear cap	36	A 5
57 131 00	Tastenblock Preset (15)	Programme knob	23	A 7
57 132 00	Knopf Tuning/Volume	Tuning knob (digital)	22	A 4
57 133 00	Drehknopf Function	Function knob	86	A 3
57 134 00	Drehknopf Balance/Bass/Treble	Balance/Bass/Treble knob	24	A 3
57 135 00	Knopf High speed/Mono/Stereo	Dubbing/mode knob	19	A 3
57 136 00	Knopf Netz	Power knob	12	A 3
57 137 00	Knopf CD Open/Close	Open/close knob	10	A 4
57 138 00	Tastenblock CD (8)	CD function knob	14	A 4
57 173 00	Sicherungsring Plattenteller	E Ring	52	A 0
57 139 00	Plattenpuck	45 r.p.m. adapter	53	A 4
57 140 00	Fernbedienungsgeber Midi 2290	Remote control assembly	Beip.	E 3
13 330 00	Wurfantenne	FM help antenna	Beip.	A 4

Explosionsdarstellung Gehäuse Midi 2290
Exploded view housing Midi 2290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Ersatzteilliste Gehäuse Midi 2280
Spare parts list housing Midi 2280

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisguppe Price-key
57 142 00	Frontblende Tuner Analog	Tuner escutcheon	37	B 4
57 143 00	Frontblende Cassette	Main escutcheon	27	B 9
57 144 00	Frontblende CD	CD escutcheon	8	B 5
57 112 00	Emblem Schneider	Escut. name plate Schneider	89	A 8
57 113 00	Emblem Dual	Name plate Dual	89	A 3
57 114 00	Seitenteil rechts	Main cabinet right	64	A 7
57 115 00	Seitenteil links	Main cabinet left	63	A 7
57 177 00	Gehäuseoberteil	Turntable base	51	C 2
57 116 00	Gehäuseboden	Cabinet base	78	C 2
57 117 00	Gummi Fuß vorne	Rubber sheet foot	90	A 2
57 118 00	Gummi Fuß hinten	Rubber foot	66	A 2
57 119 00	Abdeckhaube Midi 2280/2290	Dust cover	49	C 5
57 145 00	Abdeckung Tuner Skala	Dial plate	43	A 4
57 120 00	Abdeckblende Tuner	Digital lens	84	A 4
57 121 00	Abdeckblende Power Meter	Main lens	28	A 4
57 122 00	Abdeckblende CD Display	CD display lens	6	A 4
57 123 00	Abdeckung CD-Schlitten	CD door	5	A 4
57 124 00	Blende Cassettenfach	Door lens	1	A 5
57 125 00	Deckel Cassettenfach A (links)	Cass. door cover left	2	A 8
57 126 00	Deckel Cassettenfach B (rechts)	Cass. door cover right	3	A 8
57 127 00	Cassettenfach	Door stand	25	B 3
60 266 00	Feder Cassettenfach	Door spring	4	A 3
57 128 00	Klaviertaste schmal (10)	Cassette key knob small	30	A 3
57 129 00	Klaviertaste breit (1)	Cassette key knob large	29	A 4
57 130 00	Dämpfung Cassettenfach	Gear damper + gear cap	36	A 5
57 135 00	Knopf High speed/Mono, Stereo	Dubbing/mode knob	19	A 3
57 146 00	Drehknopf Tuning	Tuning knob	13	A 3
57 147 00	Drehknopf Funktion	Function knob	86	A 3
57 134 00	Drehknopf Balance/Bass/Treble	Balance/treblel/bass knob	24	A 3
57 148 00	Drehknopf Volume	Volume knob (analog)	61	A 3
57 149 00	Knopf Netz	Power knob (analog)	12	A 3
57 137 00	Knopf CD Open/close	Open/close button	10	A 4
57 138 00	Tastenblock CD (8)	CD function knob	14	A 4
57 150 00	Achse Abstimmknopf	Tuning shaft	57	B 3
57 151 00	Skalenzeiger	Dial pointer	77	A 7
57 152 00	Abstimmrad	Dial drum	95	B 3
11 112 00	Skalenseil			
57 173 00	Sicherungsring Plattenteller	E Ring	52	A 0
57 139 00	Plattenpuck	45 r. p.m. Adapter	53	A4

Bitte bei Ersatzteilbestellung die genaue Bezeichnung und **Ident-Nr. (siehe Typenschild)** des Gerätes sowie Bestell-Nummer und Positions-Nummer des Ersatzteils angeben.

For ordering of spare parts please state exact description and **ident.-no. of unit (see silver rating label on the backside of unit)** as well as part no. and position no. of required spare parts.

Der Umwelt zuliebe!

Benutzen Sie:

☎ Bildschirmtext *317298 #

oder

Telefax: 08245/51326

Diese Serviceanweisung
wurde auf chlorfrei gebleichtem
Papier gedruckt.

Technische Änderungen vorbehalten.
Technical modifications reserved.

Herstellung: Holzmann Druck, 86825 Bad Wörishofen

Zusatz zur Serviceanweisung

Additional service manual

Ident-Nr. 68 925
Ident-Nr. 68 926
Ident-Nr. 68 927
Ident-Nr. 68 928
Ident-Nr. 68 929
Ident-Nr. 68 930

Midi 2280
Midi 2290

Achtung!

Diese Serviceanweisung ist **zusätzlich zur Serviceanweisung Midi 2280/Midi 2290 zu verwenden,** wenn es sich um Geräte mit oben genannter Ident-Nr. handelt.

Diese Geräte enthalten neue CD-Spieler.

Für alle anderen benötigten Unterlagen verwenden Sie bitte die Serviceanweisung Midi 2280/Midi 2290 mit der Bestell-Nr. 57 200 00.

Attention!

This service manual is **additional to the service manual Midi 2280/Midi 2290** if you handle units with the above mentioned ident-no.

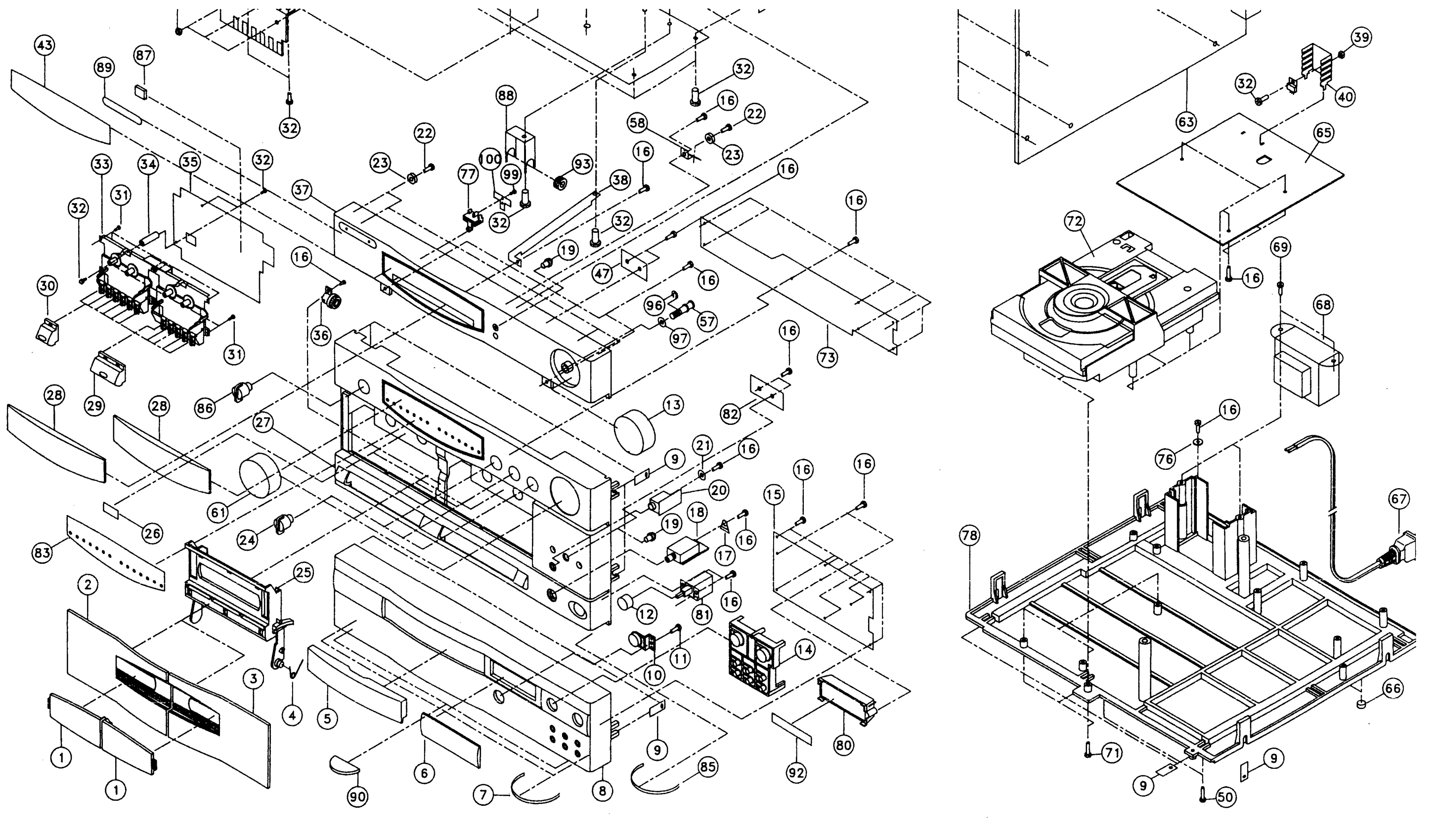
These units contain new CD players.

For all other documents needed use the service manual Midi 2280/Midi 2290 with part. no. 57 200 00.

Diese Service-Unterlage wurde ausschließlich für autorisiertes Fachpersonal erstellt.
Für Eingriffe durch nicht autorisierte Personen übernimmt der Hersteller keine Haftung.

This service manual was made for authorized specialists only.
For interventions by not authorized persons producer doesn't take possession of liability.

Explosionsdarstellung Gehäuse Midi 2280 mit neuem CD-Spieler (Ausschnitt)
Exploded view housing Midi 2280 with new CD player (cut-out)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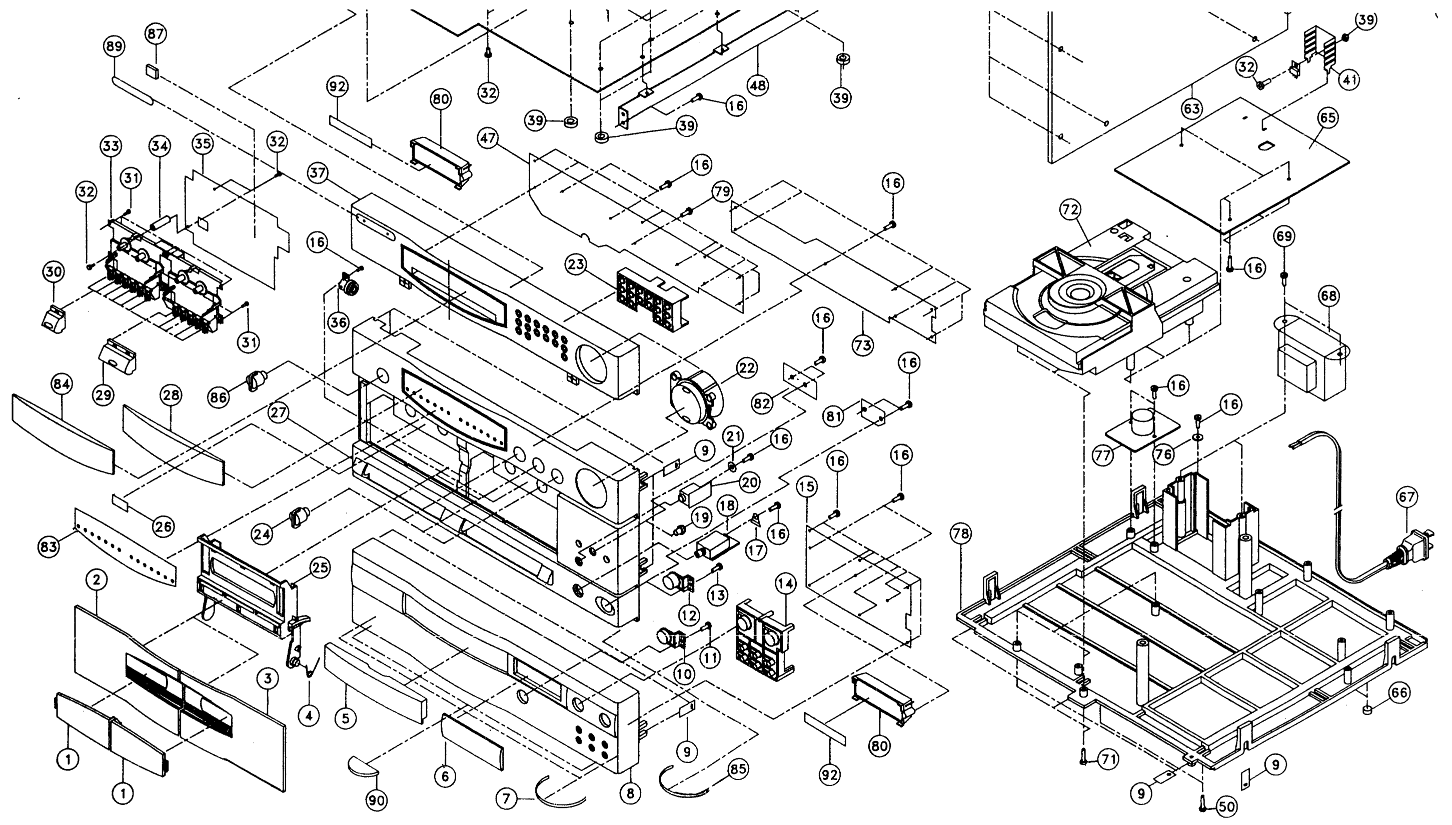
Explosionsdarstellung Gehäuse Midi 2290 mit neuem CD-Spieler (Ausschnitt)
Exploded view housing Midi 2290 with new CD player (cut-out)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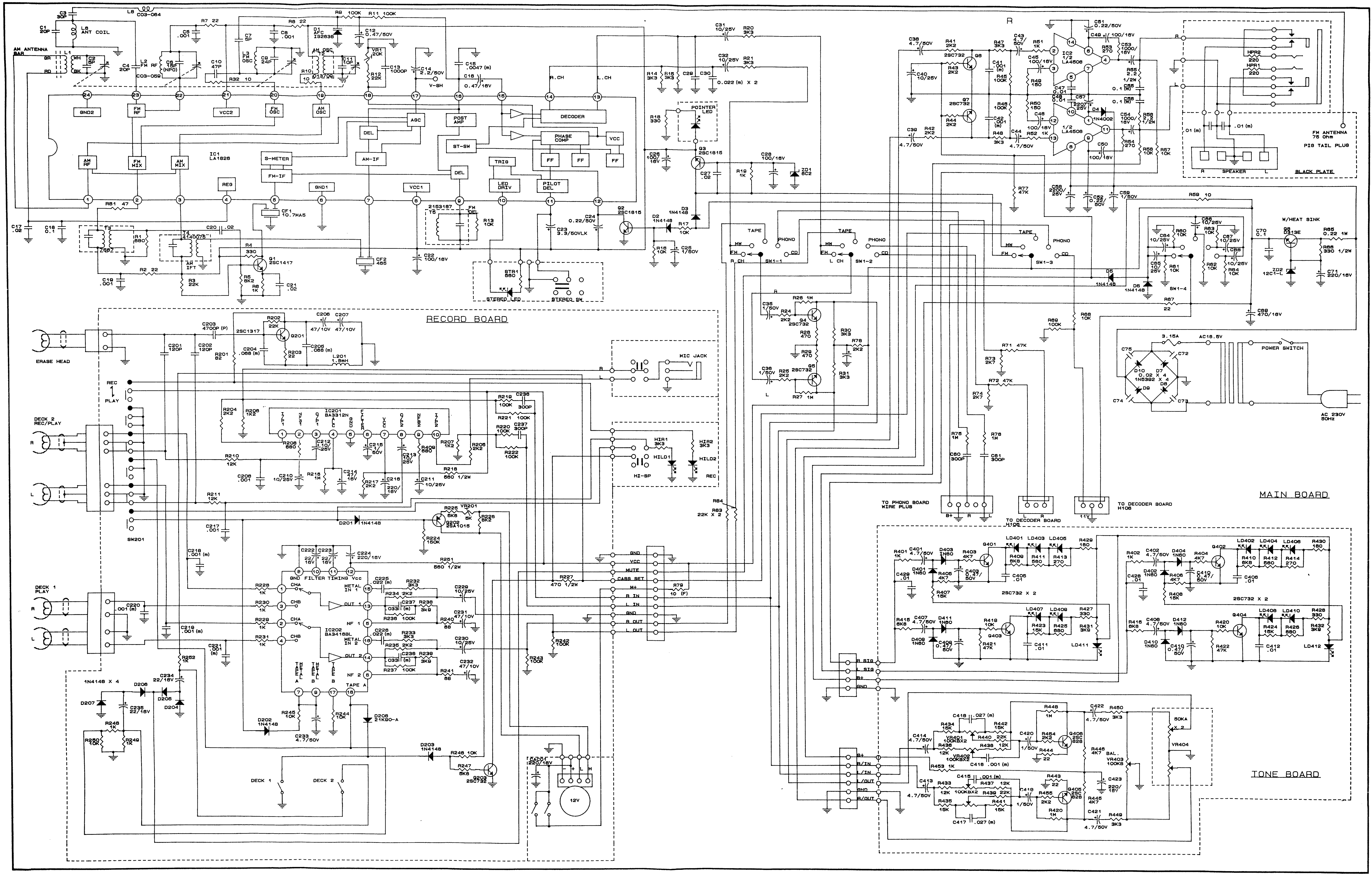
Schaltbild Grundgerät Midi 2280 (ohne CD-Spieler)
Schematic diagram unit Midi 2280 (without CD player)


AM ANTENNA BAR
ANT COIL
IC1 LA1826
GND2
FM RF
VCC2
FM OSC
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AGC
POST AMP
DECODER
PHASE COMP
VCC
ST-SW
DEL
AM-IF
S-METER
FM-IF
REG
GND1
VCC1
AM RF
FM MIX
AM MIX
TRIG
LED DRIV
PILOT DEL
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RECORD BOARD
ERASE HEAD
MIC JACK
REC
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DECK 2 REC/PLAY
DECK 1 PLAY
SW201
IC201 BA3312N
IC202 BA3416BL
GND FILTER TIMING Vcc
METAL IN 1
METAL IN 2
NF 1
NF 2
OUT 1
OUT 2
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TAPE B
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CHB
DECK 1
DECK 2
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HILD2
REC
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VCC
MUTE
CASS SET
M+
R IN
L IN
GND
R OUT
L OUT
TAPE
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CD
MW
FM
SW1-1
SW1-2
SW1-3
SW1-4
R CH
L CH
IC2 1/2 LA4508
SPEAKER
BLACK PLATE
FM ANTENNA 75 Ohm
PIG TAIL PLUG
HPR2 220
HPR1 220
W/HEAT SINK
POWER SWITCH
3.15A
AC18.5V
AC 230V 50Hz
D10 D7 0.02 X 4 1N5392 X 4
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TO DECODER BOARD H100
TO DECODER BOARD H106
MAIN BOARD
2SC732 X 2
R SIG
L SIG
B+
GND
R/IN
L/IN
L/OUT
R/OUT
TONE BOARD
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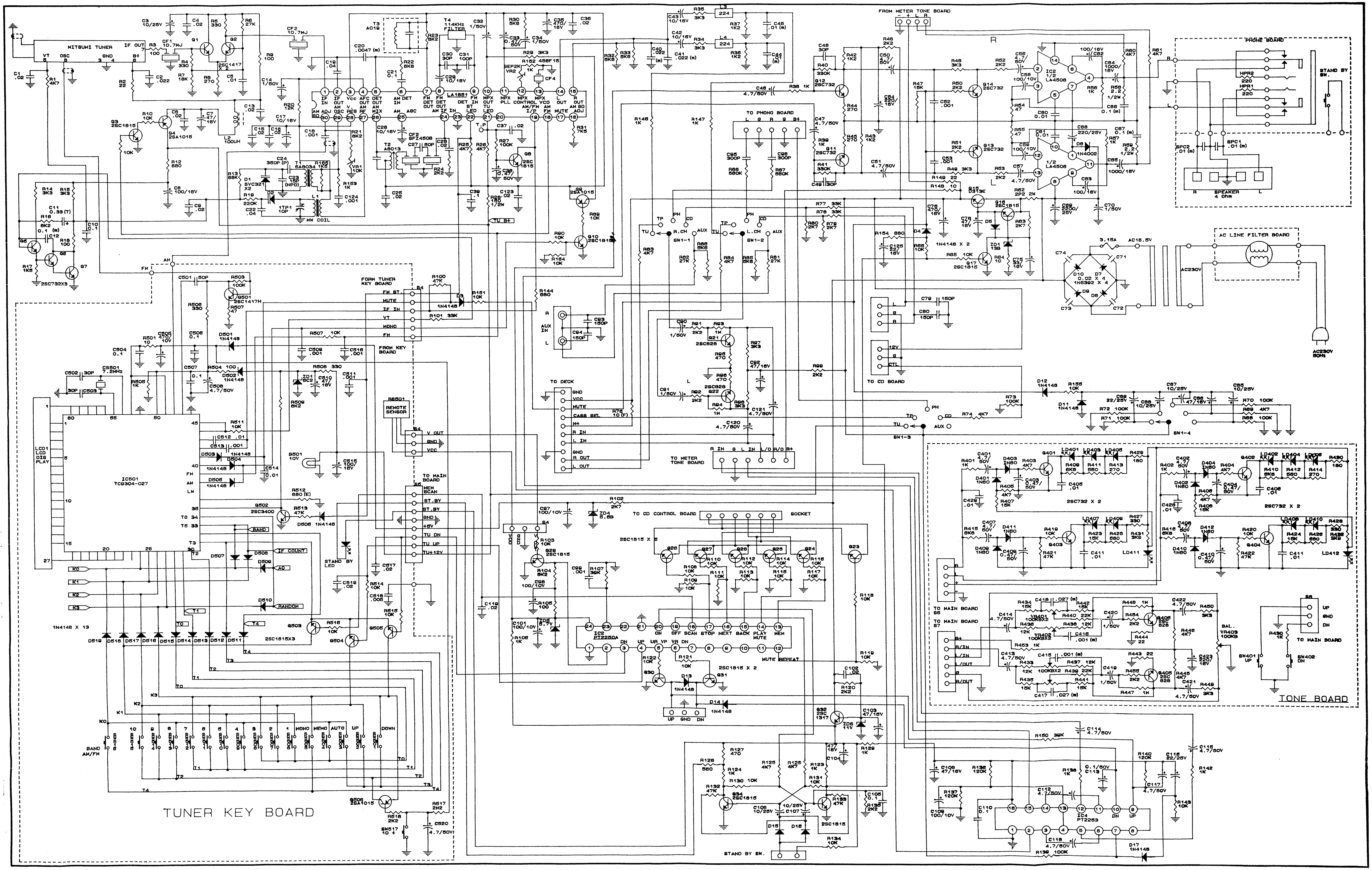
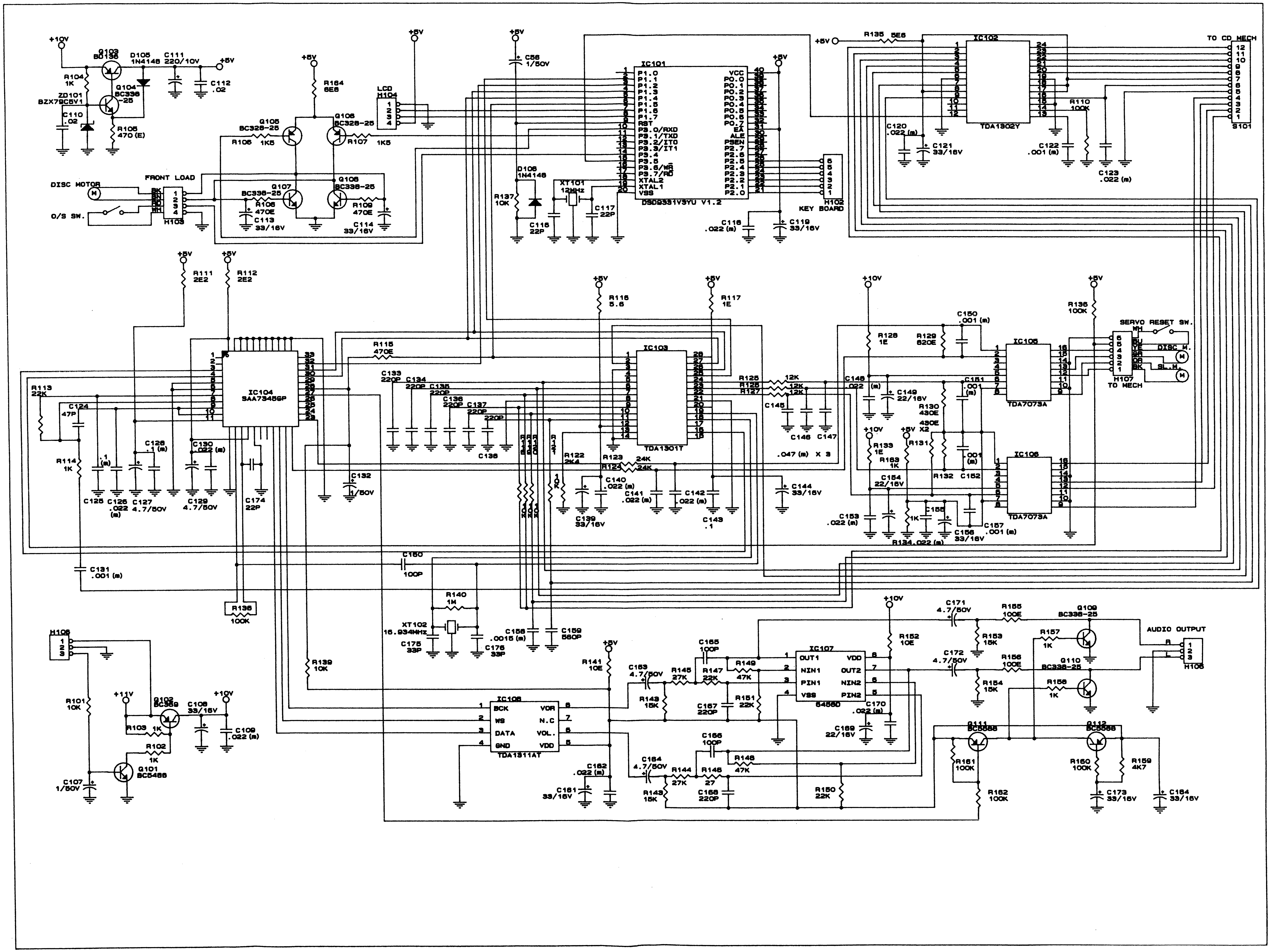
Suppl.

Schaltbild Grundgerät Midi 2290 (ohne CD-Spieler)
Schematic diagram unit Midi 2290 (without CD player)

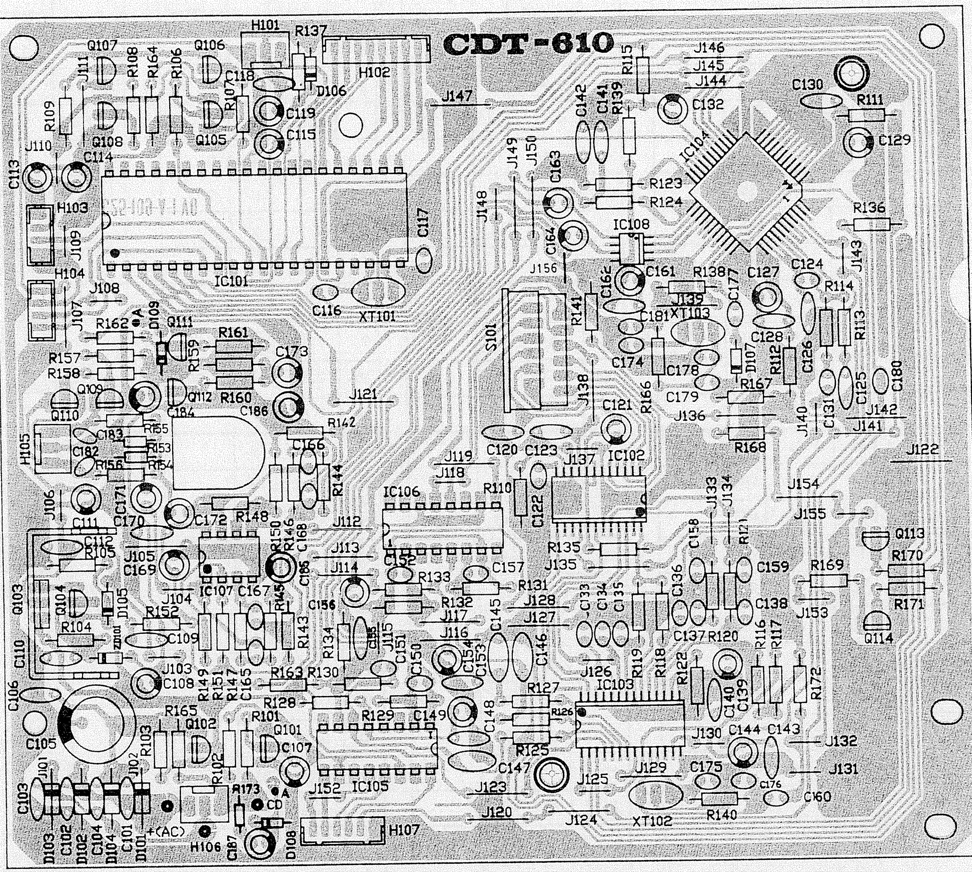

MITSUBI TUNER
LA1851
FROM METER TONE BOARD
PHONE BOARD
STAND BY SW.
SPEAKER 4 Ohm
AC LINE FILTER BOARD
AC230V 50Hz
TO PHONO BOARD
TO CD BOARD
TO DECK
TO METER TONE BOARD
FORM TUNER KEY BOARD
FROM KEY BOARD
REMOTE SENSOR
TO MAIN BOARD
IC501 TC9304-027
LCD1 LCD DISPLAY
TO CD CONTROL BOARD
SOCKET
IC2 PT2250A
IC4 PT2263
IC2 1/2 LA4508
TONE BOARD
TUNER KEY BOARD
STAND BY SW.
BAND AM/FM
MONO
MEMO
AUTO
UP
DOWN
1N4148 X 13
2SC732 X 2
2SC1815 X 5
2SC1815 X 2
2SC1815X3

Schaltbild Grundplatine CD Midi 2280/Midi 2290
Schematic diagram CD main P.C.B. Midi 2280/Midi 2290

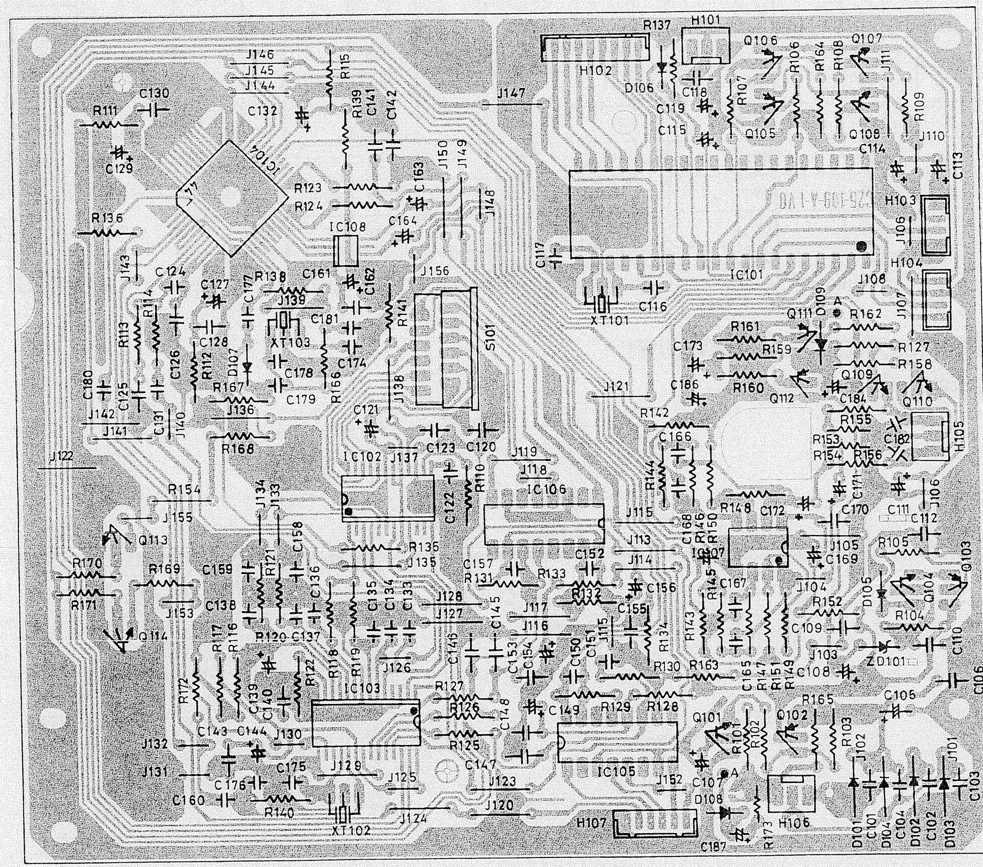

+10V
Q103 BD136
D105 1N4148
C111 220/10V
+5V
C112 .02
R104 1K
ZD101 BZX79C5V1
Q104 BC338-25
C110 .02
R105 470 (E)
+5V
R164 6E8
LCD H104
Q105 BC328-25
Q106 BC328-25
R106 1K5
R107 1K5
DISC MOTOR
FRONT LOAD
O/S SW.
H103
BK
BN
RD
WH
Q107 BC338-25
Q108 BC338-25
R108 470E
R109 470E
C113 33/16V
C114 33/16V
+5V
C56 1/50V
D106 1N4148
R137 10K
XT101 12MHz
C115 22P
C117 22P
IC101
P1.0
P1.1
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
RST
P3.0/RXD
P3.1/TXD
P3.2/IT0
P3.3/IT1
P3.4
P3.5
P3.6/WR
P3.7/RD
XTAL2
XTAL1
VSS
VCC
P0.0
P0.1
P0.2
P0.3
P0.4
P0.5
P0.6
P0.7
EA
ALE
PSEN
P2.7
P2.6
P2.5
P2.4
P2.3
P2.2
P2.1
P2.0
D5D9331V3YU V1.2
C118 .022 (m)
C119 33/16V
H102 KEY BOARD
+5V
R135 5E6
IC102
TDA1302Y
C120 .022 (m)
C121 33/16V
C122 .001 (m)
R110 100K
C123 .022 (m)
TO CD MECH
S101
+5V
R111 2E2
R112 2E2
IC104 SAA7345GP
R113 22K
C124 47P
R114 1K
R115 470E
C133 220P
C134 220P
C135 220P
C136 220P
C137 220P
220P
C138
C125
C126 .022 (m)
C127 4.7/50V
C128 .1 (m)
C129 4.7/50V
C130 .022 (m)
C174 22P
C132 1/50V
+5V
R116 5.6
+5V
R117 1E
IC103
TDA1301T
R118 1.1K
R119 12K
R120 1K
R121 1K
R122 2K4
R123 24K
R124 24K
C139 33/16V
C140 .022 (m)
C141 .022 (m)
C142 .022 (m)
C143 .1
C144 33/16V
R125 12K
R126 12K
R127 12K
C145
C146
C147
.047 (m) X 3
+10V
R128 1E
R129 820E
C150 .001 (m)
C148 .022 (m)
C149 22/16V
R130 430E
430E X2
C151 .001 (m)
IC105
TDA7073A
+5V
R136 100K
SERVO RESET SW.
WH
BU
YE
RD
OR
BK
DISC M.
SL.M.
H107 TO MECH
+10V
R133 1E
+5V
R131
R163 1K
C154 22/16V
.001 (m)
R132
C152
IC106
TDA7073A
C153 .022 (m)
1K
C155
C156 33/16V
C157 .001 (m)
R134 .022 (m)
C131 .001 (m)
C160 100P
R138 100K
R140 1M
XT102 16.934MHz
C175 33P
C176 33P
C158 .0015 (m)
C159 560P
R139 10K
+5V
R141 10E
IC108
BCK
WS
DATA
GND
VOR
N.C
VOL.
VDD
TDA1311AT
C162 .022 (m)
C161 33/16V
+10V
C165 100P
C163 4.7/50V
R145 27K
R147 22K
R149 47K
R143 15K
C167 220P
R151 22K
IC107
OUT1
NIN1
PIN1
VSS
VDD
OUT2
NIN2
PIN2
54560
R152 10E
C170 .022 (m)
C169 22/16V
C166 100P
C164 4.7/50V
R144 27K
R146 27
R148 47K
R142 15K
C168 220P
R150 22K
C171 4.7/50V
R155 100E
R153 15K
Q109 BC338-25
R157 1K
C172 4.7/50V
R156 100E
R154 15K
Q110 BC338-25
R158 1K
AUDIO OUTPUT
R
L
H105
Q111 BC558B
Q112 BC558B
R161 100K
R162 100K
R160 100K
R159 4K7
C173 33/16V
C184 33/16V
H106
R101 10K
+11V
Q102 BC559
C108 33/16V
+10V
C109 .022 (m)
R103 1K
R102 1K
Q101 BC548B
C107 1/50V

Platinendarstellung Grundplatine CD
P.C.B. diagram CD main board

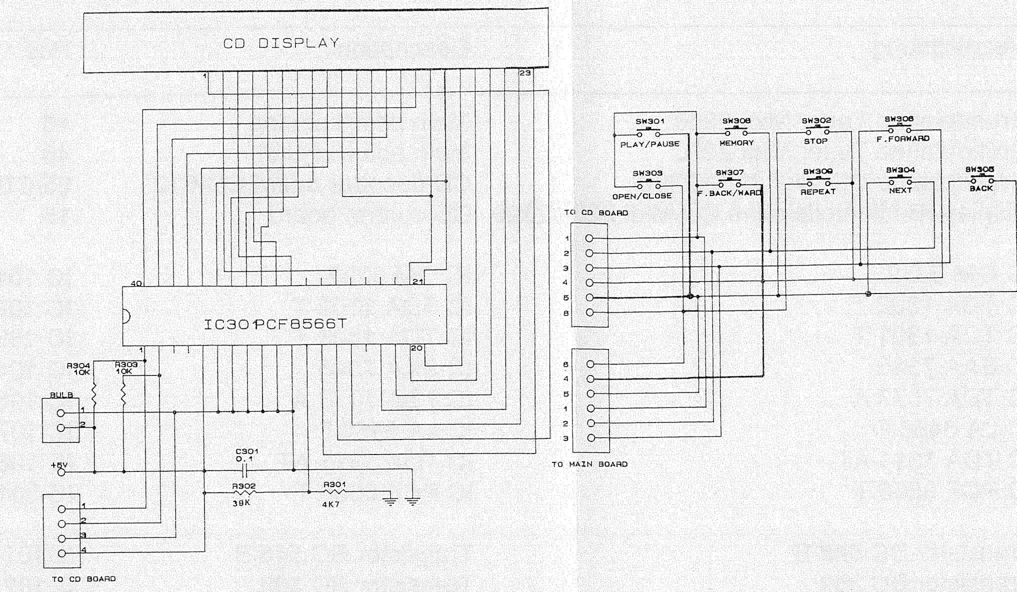
Bestückungsseite/Top view


CDT-610
IC101
IC102
IC103
IC104
IC105
IC106
IC107
IC108
XT101
XT102
XT103
S101
H101
H107

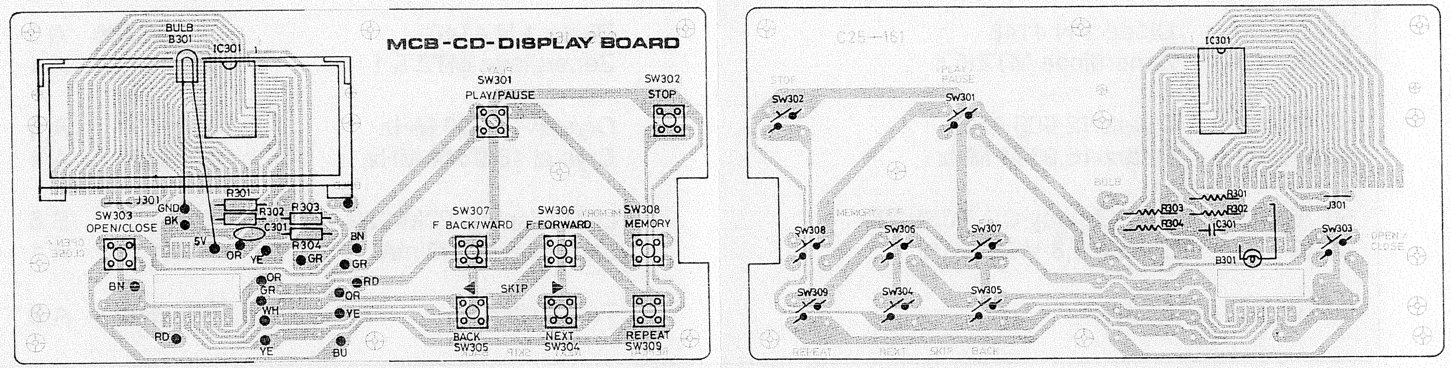
Leiterbahnseite/Bottom view


IC101
IC102
IC103
IC104
IC105
IC106
IC108
XT101
XT102
XT103
S101

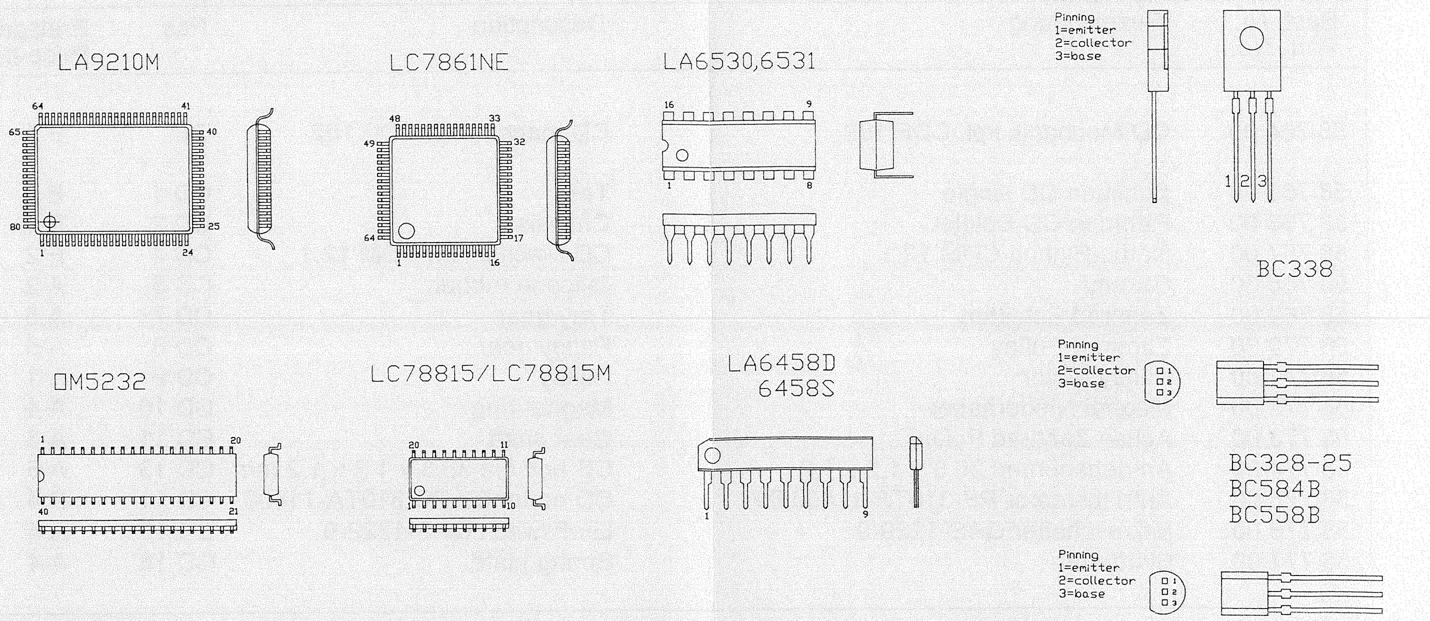
Schaltbild CD Bedienteilplatine
Schematic diagram CD key board


CD DISPLAY
IC301 PCF8566T
SW301 PLAY/PAUSE
SW306 MEMORY
SW302 STOP
SW308 F.FORWARD
SW303 OPEN/CLOSE
SW307 F.BACK/WARD
SW309 REPEAT
SW304 NEXT
SW305 BACK
R304 10K
R303 10K
BULB
C301 0.1
R302 39K
R301 4K7
5V
TO CD BOARD
TO MAIN BOARD

Platinendarstellung CD Bedienteilplatine
P.C.B. diagram CD key board


MCB-CD-DISPLAY BOARD
BULB B301
IC301
SW301 PLAY/PAUSE
SW302 STOP
SW303 OPEN/CLOSE
SW307 F BACK/WARD
SW306 F.FORWARD
SW308 MEMORY
SKIP
BACK SW305
NEXT SW304
REPEAT SW309
J301
R301
R302
R303
R304
C301
BK
OR
YE
GR
BN
RD
WH
BU
C25-181

IC- und Transistor-Anschlußbelegung
IC and transistor pin location


LA9210M
LC7861NE
LA6530,6531
BC369
Pinning
1=emitter
2=collector
3=base
BC338
DM5232
LC78815/LC78815M
LA6458D
6458S
BC328-25
BC584B
BC558B

Ersatzteilliste elektrisch
Spare parts list electrical

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
58 750 00	Grundplatine Tuner Midi 2280	Main board analog	46	F 0
58 749 00	Grundplatine Tuner Midi 2290	Main board digital	46	G 2
58 751 00	Grundplatine CD Midi 2280/2290	CD decoder board CD-610	65/CD 16	F 0
58 752 00	Display-/Bedienteilplatine CD Midi 2280/2290	CD control board	15	D 8
58 753 00	IC OM 5232	IC OM 5232	IC 101	C 3
58 754 00	IC TDA 1302 T	IC TDA 1302 T	IC 102	A 8
58 755 00	IC TDA 1301 T	IC TDA 1301 T	IC 103	C 2
58 756 00	IC SAA 7345	IC SAA 7345	IC 104	C 8
58 757 00	IC TDA 7073 A	IC TDA 7073 A	IC 105,106	A 8
23 257 00	IC LA 6458 D	IC LA 6458 D	IC 107	A 9
58 758 00	IC TDA 1311 AT	IC TDA 1311 AT	IC 108	B 3
58 759 00	IC PCF 8566 T	IC PCF 8566 T	IC 301	B 6
02 431 00	Transistor BC 548 B	Transistor BC 548 B	Q 101	A 5
58 760 00	Transistor BC 369	Transistor BC 369	Q 102	A 5
03 884 00	Transistor BD 136	Transistor BD 136	Q 103	B 1
26 938 00	Transistor BC 338-25	Transistor BC 338-25	Q 104	A 8
24 612 00	Transistor BC 328-25	Transistor BC 328-25	Q 105,106	A 3
26 938 00	Transistor BC 338-25	Transistor BC 338-25	Q 107-110	A 8
06 627 00	Transistor BC 558 B	Transistor BC 558 B	Q 111,112	A 4
11 241 00	Diode 1 N 4148	Diode 1 N 4148	D 105,106	A 2
48 278 00	Zenerdiode MTZ 5,1	Zenerdiode MTZ 5.1	ZD 101	A 1
58 761 00	Quarz 12,000 MHz	Crystal 12,000 MHz	XT 101	A 4
58 762 00	Quarz 16,9344 MHz	Crystal 16.9344 MHz	XT 102	A 4
58 763 00	LCD Display CD TCM-329	LCD Display TCM-329	LCD	B 6
57 191 00	Lampe 5,8 V/200 mA	Lamp 5.8 V/200 mA	B 301	A 1
60 790 00	Taster	Tact switch	SW div.	A 2

Ersatzteilliste CD-Mechanik
Spare parts list CD mechanism

Best.-Nr. Part No.	Bezeichnung	Description	Pos.	Preisgruppe Price-key
58 764 00	CD Mechanik kpl. CDF 102	CD mechanism CDF 102	72	F 4
58 765 00	Schlitten CD single	Tray	CD 1	B 0
58 766 00	Rahmen CD Spieler	Chassis	CD 2	B 1
58 767 00	Rafoc-Einheit CDM 12.1	CD Mechanism CDM 12.1	CD 4	F 2
58 768 00	Gummi	Silicone rubber	CD 5	A 2
58 769 00	Zahnrad Schlitten	Tray gear	CD 7	A 5
58 770 00	Zahnrad Pulley	Pulley gear	CD 8	A 5
58 771 00	Pulley Motor	Pulley	CD 9	A 1
58 772 00	Magnet Niederhalter	Magnet ring	CD 10	A 4
58 773 00	Achse Zahnrad Pulley	Gear shaft	CD 11	A 3
58 774 00	Antriebsriemen 36,3 x 1,2 x 1,2	CD belt dia 36.3 x 1.2 x 1.2 mm	CD 13	A 6
58 775 00	Antriebsmotor RF-310TA-11400 6V	CD motor 6V RF-310TA-11400	CD 14	B 4
58 776 00	Mikroschalter QAS-1229-9	Leaf switch QAS-1229-9	CD 15	A 4
58 777 00	Blattfeder	Spring plate	CD 18	A 4

Spannungstabelle IC und Transistor
IC and transistor voltage table

PIN NO.	IC 101 OM5232	PIN	IC 101 NO. OM5232
1	0	35	0.46
2	5.28	36	0.61
3	1.28	37	5.26
4	5.36	38	0.74
5	5.24	39	0.7
6	5.22	40	5.29
7	4.75	41	
8	4.78	42	
9	0.01	43	
10	5.27	44	
11	5.27	45	
12	5.27	46	
13	0.01	47	
14	5.26	48	
15	5.26	49	
16	0.01	50	
17	5.26	51	
18	5.26	52	
19	2.48	53	
20	0	54	
21	0.08	55	
22	2.11	56	
23	5.27	57	
24	5.28	58	
25	5.28	59	
26	5.29	60	
27	5.29	61	
28	5.29	62	
29	5.29	63	
30	1.77	64	
31	5.29	65	
32	0.6	66	
33	0.6	67	
34	0.6	68	

PIN NO.	IC 102 TDA1302Y	PIN	IC 102 NO.
1	-0.05	35	
2	-0.05	36	
3	-0.04	37	
4	-0.06	37	
5	-0.06	39	
6	0	40	
7	0.01	41	
8	5.23	42	
9	0.35	43	
10	0.24	44	
11	5.21	45	
12	5.26	46	
13	0.01	47	
14	1.26	48	
15	0	49	
16	0.04	50	
17	5.23	51	
18	5.23	52	
19	0	53	
20	0.24	54	
21	0.25	55	
22	0	56	
23	1.26	57	
24	0.01	58	
25		59	
26		60	
27		61	
28		62	
29		63	
30		64	
31		65	
32		66	
33		67	
34		68	

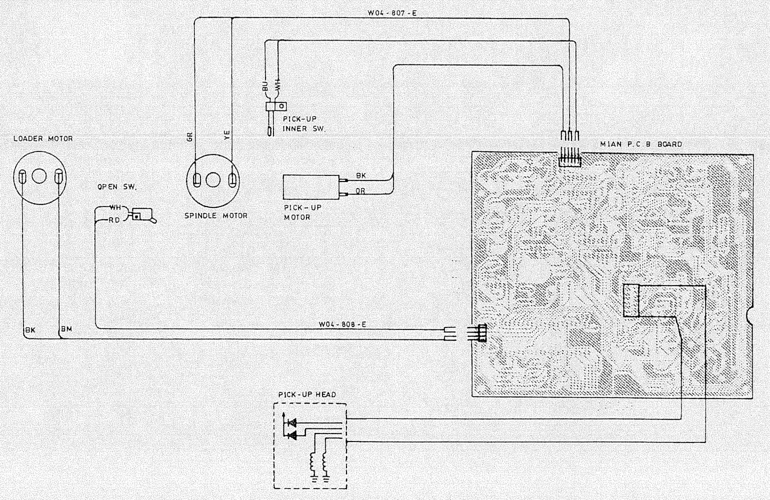
PIN NO.	IC 103 TDA1301T	PIN	IC 103 NO.
1	5.22	35	
2	0.01	36	
3	0	37	
4	1.14	38	
5	-0.06	39	
6	-0.04	40	
7	-0.03	41	
8	0	42	
9	-0.03	43	
10	-0.04	44	
11	-0.04	45	
12	5.28	46	
13	0.1	47	
14	0	48	
15	0	49	
16	0.02	50	
17	2.62	51	
18	0.82	52	
19	0.82	53	
20	5.27	54	
21	0	55	
22	2.63	56	
23	2.63	57	
24	2.64	58	
25	5.28	59	
26	5.26	60	
27	5.25	61	
28	5.27	62	
29		63	
30		64	
31		65	
32		66	
33		67	
34		68	

PIN NO.	IC 104 SAA7345	PIN	IC 104 NO. SAA7345
1	0.13	35	0
2	0.42	36	0
3	0.02	37	0
4	5.24	38	0
5	0	39	0
6	0	40	0
7	2.64	41	0
8	2.64	42	0
9	2.65	43	0
10	2.65	44	5.24
11	5.29	45	
12	0	46	
13	2.48	47	
14	2.49	48	
15	5.24	49	
16	0	50	
17	2.63	51	
18	0.12	52	
19	0.11	53	
20	0.09	54	
21	0.09	55	
22	1.55	56	
23	1.55	57	
24	5.24	58	
25	5.24	59	
26	0.01	60	
27	0.01	61	
28	5.23	62	
29	2.63	63	
30	5.25	64	
31	1.27	65	
32	1.27	66	
33	0	67	
34	0	68	

PIN NO.	IC 105 TDA7073A	IC 106 TDA7073A	IC 107 LA6458D	IC 108 TDA1311AT
1	1.55	2.65	5.16	0.18
2	1.54	2.65	5.16	0.26
3	0	0	5.13	0.29
4	0	0	0	0
5	10.4	10.4	5.12	3.71
6	2.65	2.65	5.12	0
7	2.65	2.65	5.12	3.71
8	0	0	10.39	5.16
9	5.03	4.98		
10	0	0		
11	0	0		
12	5.1	5.08		
13	4.98	5.01		
14	0	0		
15	0	0		
16	4.93	5.05		

TR	B	C	E
Q101	0.02	0.71	0
Q102	10.49	9.72	10.42
Q103	5.31	9.22	10
Q104	9.22	5.18	4.6
Q105	0.29	5.27	5.30
Q106	0.29	5.27	5.30
Q107	0.03	0.03	0.01
Q108	0.03	0.03	0.01
Q109	0.01	0.74	0
Q110	0.01	0.74	0
Q111	5.03	4.50	5.16
Q112	5.05	5.11	5.16

Verdrahtungsplan CD-Spieler
Wiring diagram CD player



Service Mode CD-Spieler

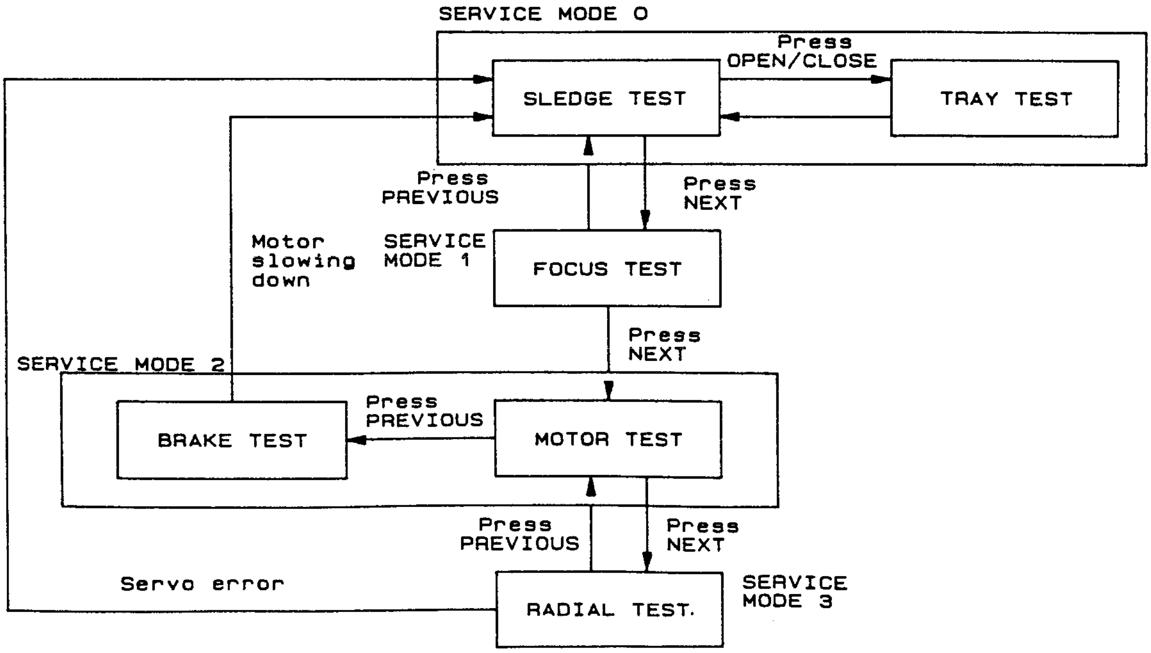
Um in den Service Mode zu gelangen, müssen die 2 folgenden Tasten gleichzeitig beim Einschalten des Gerätes gedrückt werden:

NEXT, PREVIOUS (SKIP)

Service Mode CD player

To enter service mode, the following 2 keys should be pressed during the system power on sequence:

NEXT, PREVIOUS (SKIP)


SERVICE MODE 0
SLEDGE TEST
Press OPEN/CLOSE
TRAY TEST
Press PREVIOUS
Press NEXT
Motor slowing down
SERVICE MODE 1
FOCUS TEST
Press NEXT
SERVICE MODE 2
BRAKE TEST
Press PREVIOUS
MOTOR TEST
Press PREVIOUS
Press NEXT
Servo error
RADIAL TEST.
SERVICE MODE 3

Der jeweilige Service Mode Zustand wird in der Anzeigeeinheit angezeigt (z.B. 00, 01, 02, 03).

Wird die Taste PLAY/PAUSE im Service Mode Zustand 0 gedrückt, wird die Einlaufspur (TOC) gelesen; der Service Mode wird gelöscht und der CD Spieler geht in Stellung STOP.

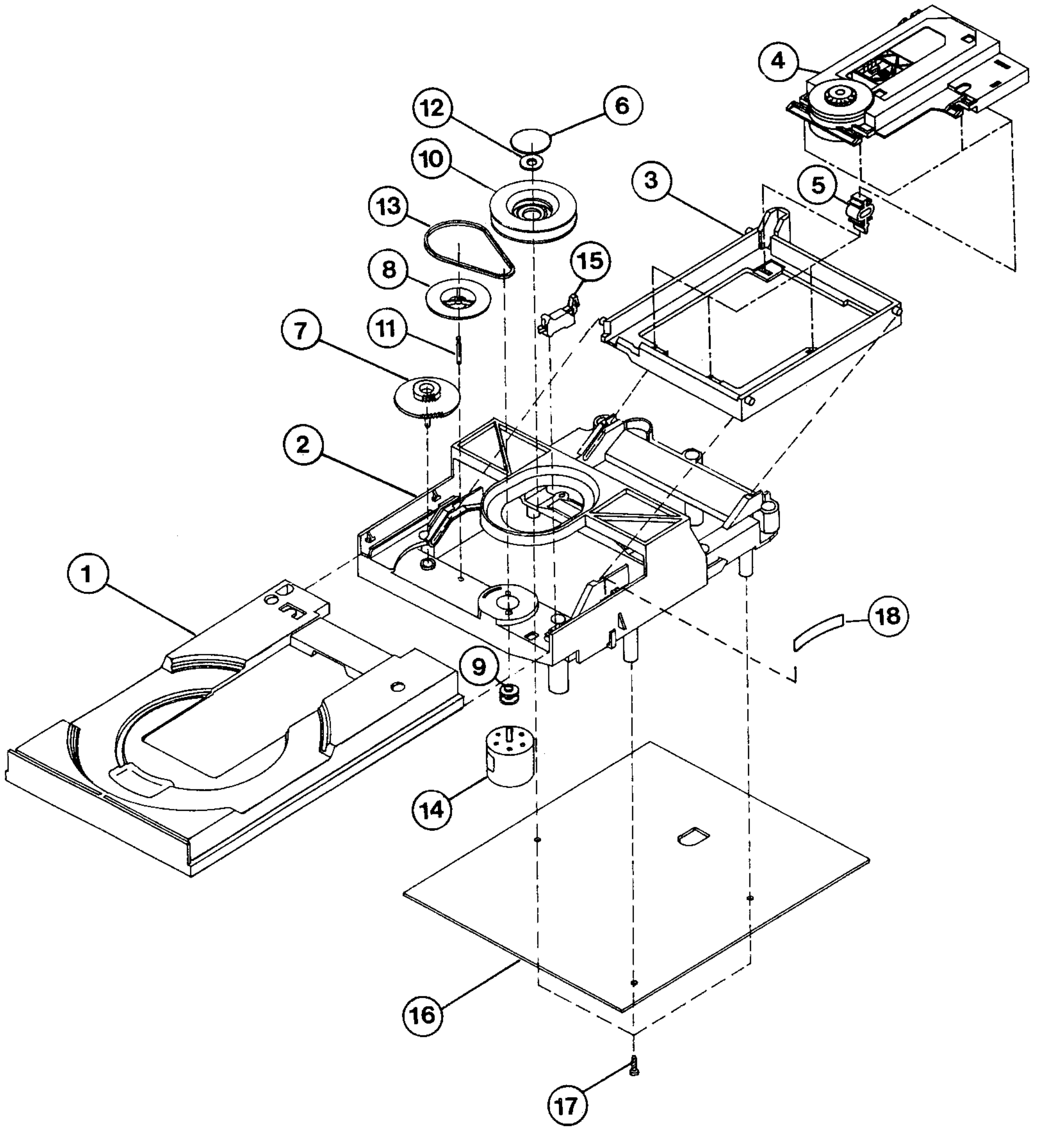
Werden unzulässige Tasten gedrückt, erscheint für ca. 2 Sekunden "Err 00" in der Anzeigeeinheit.

The actual service state is displayed in the display unit (e.g. 00, 01, 02, 03).

If PLAY/PAUSE is pressed in service state 0, TOC is read, service mode is cleared and STOP mode entered.

If an invalid key is pressed at any time, "Err 00" is displayed on the LCD for 2 seconds.

Explosionsdarstellung CD-Mechanik
Exploded view CD mechanism



Bitte bei Ersatzteilbestellung die genaue Bezeichnung und **Ident-Nr. (siehe Typenschild)** des Gerätes sowie Bestell-Nummer und Positions-Nummer des Ersatzteils angeben.

For ordering of spare parts please state exact description and **ident.-no. of unit (see silver rating label on the backside of unit)** as well as part no. and position no. of required spare parts.

Benutzen Sie:

☎ Bildschirmtext *317298 #

oder

Telefax: 08245/51326

Der Umwelt zuliebe!

Diese Serviceanweisung
wurde auf chlorfrei gebleichtem
Papier gedruckt.

Technische Änderungen vorbehalten.
Technical modifications reserved.

Herstellung: **H.** Holzmann Druck, 86825 Bad Wörishofen